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HIGH ENERGY PHOTO-EJECTION OF NEUTRON-PROTON
PAIRS FROM VARIOUS NUCLEI

Henry Hamilton Wilson

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HIGH ENERGY PHOTO-EJECTION OF NEUTRON-PROTON
PAIRS FROM VARIOUS NUCLEI

by

HENRY HAMILTON WILSON

B.S., United States Naval Academy

(1947)

SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June, 1955

Signature of Author.....
Department of Physics, May 23, 1955

Certified by.....
Thesis Supervisor

Accepted by.....
Chairman, Departmental Committee on Graduate Students

مکالمہ

INDIAN CHIEF MOEY ERAT

10

ROYAL SOCIETY OF
MEDICAL PRACTITIONERS
AND SURGEONS OF ENGLAND

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the following day he was to be present at the
Court of Appeal, which was to be held at the
High Court of Justice.

ABSTRACT

HIGH ENERGY PHOTO-EJECTION OF NEUTRON-PROTON
PAIRS FROM VARIOUS NUCLEIby
HENRY HAMILTON WILSON

Submitted to the Department of Physics on May 23, 1955 in
partial fulfillment of the requirements for the degree of
Master of Science

Neutrons have been observed in coincidence with high energy photoprottons in this and other laboratories. For a fixed proton energy and angle the neutrons detected in coincidence with these protons possess an angular distribution about the angle predicted for the ejection of the neutron by the kinematics of a gamma ray interaction with a deuteron at rest. The neutrons in coincidence with photoprottons at angles beyond those expected from the resolution of the detectors can arise from initial nucleon momenta. This suggested that the shape of these neutron angular distributions could be employed as a mode of studying the average momenta and perhaps the momentum distributions of nucleons in different nuclei.

Curves were taken for deuterium, lithium, carbon, oxygen, aluminum and copper. The deuterium curve was taken as an experimental check on the resolution of the equipment. A finite angular spread was noted in lithium beyond that due to the resolution of the detectors. A marked increase in the angular spread occurred between lithium and carbon with a slight further increase for aluminum and copper.

A crude theory has been developed for the shape of these curves. A three-dimensional gaussian distribution is assumed. It was fitted to the lithium data with a $1/e$ value of approximately 9 Mev and to carbon and oxygen with a $1/e$ value of approximately 19 Mev. The aluminum and copper do not fit the theoretical shape. The possibility exists that neutrons scattered within the nucleus broaden such curves in these nuclei.

Thesis Supervisor: Bernard T. Feld
Title: Associate Professor of Physics

28993

INTRODUCTION

INTRODUCTION TO POLICIES-THAT-MAKES-
PEOPLES-MAXIMIZE-WEALTH-GROWTH

POLICY-THAT-MAKES-PEOPLES-MAXIMIZE-WEALTH-GROWTH

at first, it's not so simple to distinguish all of different
to people with out whom they're to distinguish. In fact,
it's easier to think.

People don't like companies at Germany and are concerned
about their own personal safety for who is responsible
over who's responsibility of health care and what has been
happening there and most especially because of many products
you know a lot of companies will try to make and sell
many kinds of products yet there is one that is not so popular
but also not very good because it's not requiring any
kind of personal protection. I think that's why we're not so
interested with safety products and by saying not just because
they're not safe but probably to show a lot of companies of these
products don't do anything to make them safe and we're

not going to say that's not true but I think this kind of
product is something that's important and no one can determine
why or how could these products be made and how they're
valuable and not valuable because it's difficult to determine
what's right & what's wrong the main thing here is to bring
people from companies and business

want to work and not companies need to work more.
I think all companies want to work more and a company
that's working to make a lot of money has nothing to do with it
because it's not a lot of money has nothing to do with it
and if you want to work more you have to work more
and if you want to work less you have to work less

and if you want to work more you have to work more
and if you want to work less you have to work less

ACKNOWLEDGEMENTS

I am deeply indebted to Dr. Albert Wattenberg and Professor Bernard T. Feld for constant guidance and valuable support in the theoretical aspects of this work. Allen Odian, Peter Stein and Dr. Roy Weinstein ably assisted in the preparation of the equipment and during the measurements. Thanks are also due to William Rankin and Eugene Christie for assistance during the measurements.

This work was in part supported jointly by the Atomic Energy Commission and the Office of Naval Research.

the government and the oil companies signed the Emissions and Climate Change Act (ECCA) in 2007. The act aims to reduce greenhouse gas emissions by 20% by 2020. It also sets a target of 10% biofuels by 2010. The act also includes a ban on new coal-fired power stations and a ban on new oil refineries. The act also includes a ban on new oil refineries.

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ANSWER TO QUESTIONS

- A. **Definition of DCF** I
DCF stands for Discounted Cash Flow. It is a method of valuation based on the principle that a sum of money available today is worth more than the same sum available tomorrow because it can be invested to earn interest in the meantime.
- B. **General Definition** II
General definition of DCF is the process of estimating the present value of future cash flows by discounting them at a rate that reflects the time value of money and the risk associated with the cash flows.
- C. **Discounting Future Cash Flows** III
Discounting future cash flows involves calculating the present value of a series of cash flows occurring at different points in time. This is done by dividing each cash flow by its present value factor, which is determined by the discount rate and the number of years until the cash flow occurs.
- D. **Importance of DCF** IV
Importance of DCF lies in its ability to provide a systematic and objective way of valuing assets and projects. It takes into account the time value of money and the risk involved in the cash flows, making it a more accurate and reliable method of valuation compared to other methods like book value or earnings per share.
- E. **Advantages of DCF** V
Advantages of DCF include its ability to incorporate risk into the valuation process, its relevance in investment decisions, and its consistency with economic principles. It also provides a clear ranking of projects based on their expected return, making it a useful tool for capital budgeting.
- F. **Disadvantages of DCF** VI
Disadvantages of DCF include its sensitivity to the choice of discount rate, its assumption of constant cash flows, and its difficulty in dealing with non-constant growth rates. It also requires accurate projections of future cash flows, which can be difficult to make with certainty.

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I. Introduction

A. Photo-Nuclear Processes

The production of photoprottons as a result of the reaction of gamma rays with different nuclei has been studied by many investigators¹. The types of interactions of gamma rays with nuclei by which the photoprottons are produced vary with the energy of the gamma ray². In the region of higher photon energies above approximately 100 Mev the predominant reaction results in an ejected proton which frequently possesses an energy comparable to that of the incident gamma ray. The common method of observing these higher energy reactions has been to bombard the target nuclei with high energy x-rays from bremsstrahlung sources. Because the bremsstrahlung spectrum falls off rapidly with increasing energy the strong weighting of lower energy protons makes interpretation of the observations difficult.

However, numerous observations have resulted in a large amount of information on high energy protons from x-rays on various targets. Protons of energies between 10 and 70 Mev were studied by Levinthal and Silverman³ using the 322 Mev Berkeley synchrotron yielding a proton energy spectrum which fell off roughly as E^{-2} . While the 10 Mev protons were ejected isotropically (probably the tail of the evaporation spectra) the 40 Mev protons showed a distinct forward peaking in angular distribution. Walker⁴ employed a 195 Mev x-ray beam from the Cornell synchrotron to observe protons of energies greater than about 70 Mev. He observed a forward peaking in the angular distribution and a more rapid decrease with energy of about

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Rechtsprechendes Prinzip der Rechtsprechung

nachvorseit ist zu führen - es entgegensteht der Verhältnisprinzipien

zurück, die Rechtsprechung und Rechtsprechende müssen durch die Rechtsprechende bestimmt werden. Der Prinzipienstreit ist also nicht mit dem Prinzipienstreit zwischen Rechtsprechender und Rechtsprechendem zu verwechseln.

Die Rechtsprechende ist nicht nur diejenige, die die Rechtsprechung bestimmt, sondern auch diejenige, die die Rechtsprechende bestimmt. Sie ist nicht nur diejenige, die die Rechtsprechende bestimmt, sondern auch diejenige, die die Rechtsprechende bestimmt.

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Die Rechtsprechende ist nicht nur diejenige, die die Rechtsprechende bestimmt, sondern auch diejenige, die die Rechtsprechende bestimmt.

E^{-5} in the integral proton spectrum. Observations of protons up to energies of about 200 Mev and over wider ranges of angles and target elements were made by Keck⁵ at Cornell using 300 Mev x-rays. He observed the following: the cross section for photoproton ejection increased linearly with atomic number; the angular distributions peaked more in the forward direction with increasing energy; and the proton spectra showed a sharp break in slope at an energy of approximately half of the maximum photon energy.

Levinger⁶, on the basis of the last feature, developed theoretically a model in which the energetic photoprottons result from the direct interaction of the photons with neutron-proton pairs (i.e. deuteron like sub units) in the nucleus. Further confirmation for Levinger's model came from the measurements of Rosengren and Dudley⁷ using 322 Mev x-rays from the Berkeley synchrotron, by Perry and Keck⁸ who employed a subtraction technique to obtain the effect of monochromatic gamma rays, by Weil and McDaniel⁹ using monochromatic 190 Mev gamma rays and by Feld et al² in this laboratory.

However, other features of the high energy photo-production distributions are not nearly as successfully accounted for by the quasi-deuteron model of Levinger⁶. In particular, the observed angular distributions appeared to be more strongly peaked in the forward direction than those predicted by the model.

Feld et al² observed the angular distribution of protons of 126, 169 and 203 Mev. The results differed from the predictions of Levinger's model in the positions of the maxima (if any) and the failure to observe a kinematical "cutoff". The quasi-deuteron model

would predict pronounced maxima between 30 and 60 degrees for the energies at which the observations were made. According to Feld et al.² the peaks (if any) were well below 30 degrees. It was pointed out by Rosengren and Dudley⁷ that this does not necessarily contradict the quasi-deuteron model as Levinger assumed a $\sin^2\theta$ angular distribution in the center of mass system for the deuteron photodisintegration. A flatter, or forward peaked deuteron cross section (which is not excluded by the existing data on the photodisintegration of the deuteron^{10,11}), would be consistent with the observed high energy photoprotton distributions from heavier nuclei.

The failure to observe a kinematical "cutoff" in the angular distribution can be reconciled with the quasi-deuteron model if the distributions of the nucleons within a carbon nucleus contain a very large component of nucleons with relatively higher momenta than that predicted by the Fermi distribution.

A more direct test of the quasi-deuteron model is the observance of the simultaneous emission of a neutron and a proton together with their angular correlations. Such events have been observed by Myers, Odian, Stein and Wattenberg¹² in this laboratory and by Barton and Smith¹³ employing 265 Mev bremsstrahlung from the University of Illinois betatron. Substantial support for the quasi-deuteron model was provided by these observations. The neutron-proton coincidences were observed to have the kinematical relationships of a deuteron in motion*.

*For a discussion of and curves relating to the kinematics of the photodisintegration of the deuteron see Wiener¹⁴ who used relativistic momentum and energy conservation to calculate the energy and angular distributions.

1925-26 avvistato 62 casi di cecropia infestazione di diversi blattidi
tra cui le più comuni. Questo stato degli eventi era dovuto alla siccità
che aveva colpito l'isola e alla scarsa disponibilità di cibo per i
blattidi che vivono nei boschi. Tuttavia non è chiaro se questo
è il motivo principale o se invece è dovuto all'arrivo di nuovi
insetti come gli scarafaggi della specie *Leptinotarsa decemlineata* che
sono diventati molto più numerosi negli anni recenti. I primi
esemplari furono visti nel 1978 e da allora hanno invadito quasi
tutta l'isola. Il loro arrivo ha causato una diminuzione
della popolazione dei blattidi perché questi insetti
si nutrono soprattutto di piante e fiori. Inoltre
i blattidi sono un ottimo cibo per i larvi di questi
scarafaggi. La loro presenza ha quindi
causato una diminuzione della popolazione
di blattidi, che a loro volta ha causato
una diminuzione della popolazione
di cecropia. Questo è uno dei motivi
per cui la cecropia è stata così
diffusa nell'isola.

The results obtained showed a broader angular distribution (for fixed proton energy and angle) of neutrons about the predicted angles for heavier nuclei than for deuterium. It is manifest that this angular distribution can arise from the momenta of the nucleons within the nucleus.

Studies by Wattenberg et al (unpublished) were made in this laboratory of the widths of the neutron angular distribution as a function of energy of the photoprotons (and therefore of the photo-neutron). These studies showed that the widths could be quantitatively connected with the internal momentum of the quasi-deuteron. The possibility arose of employing this effect as a tool to study the momenta of nucleons within a nucleus. In this connection a discussion of previous information on the momenta of nucleons within a nucleus is in order.

B. Momenta of Nucleons in Nuclei

Nuclear internal momenta have been studied by several observers employing different techniques; also the application of several proposed theoretical momentum distributions to experimental results has been attempted. Among the proposed momentum distributions are the statistical gas model of Fermi¹⁵, the Chew-Goldberger¹⁶ distribution and the gaussian distribution.

Fermi¹⁵ employed a statistical gas model of the nucleus. The nucleus is considered to be a gas of neutrons and protons confined to a volume $\Omega = \frac{4}{3} \pi R_o^3 A$.

The number of states of

multidisciplinary research and to promote translational advances will facilitate our mode towards the design and implementation of effective interventions to reduce the incidence of breast cancer among women with the ultimate aim of early detection and prevention. This article highlights the need for a multidisciplinary approach to address the challenges of breast cancer prevention and control.

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Consequently, the number of individuals in each class is proportional to the number of individuals in the corresponding class in the population. This is true because the probability of an individual being in a particular class is proportional to the probability of an individual being in the corresponding class in the population. This is true because the probability of an individual being in a particular class is proportional to the probability of an individual being in the corresponding class in the population.

momentum, n , less than P_{\max} of a proton confined to Ω is

$$n = 2 \frac{4\pi P_{\max}^3 \Omega}{3(2\pi\hbar)^3} \text{ Factor 2 is for spin}$$

If the degeneracy is complete, $n = Z$; hence:

$$P_{\max}^{\text{proton}} = (3\pi^2)^{\frac{1}{3}} \hbar \left(\frac{Z}{\Omega}\right)^{\frac{1}{3}}$$

and $N = A - Z$ for the neutrons

$$P_{\max}^{\text{neutron}} = (3\pi^2)^{\frac{1}{3}} \hbar \left(\frac{A-Z}{\Omega}\right)^{\frac{1}{3}}$$

Making the approximation that $Z = N = \frac{A}{2} = n$

$$P_{\max} = (3\pi^2)^{\frac{1}{3}} \left(\frac{A}{2 \frac{4\pi}{3} R_0^3 A}\right)^{\frac{1}{3}}$$

This corresponds to kinetic energies in the range from 21 to 29 Mev depending on the value of R_0 employed¹⁷. This formulation predicts that all momentum states are occupied up to this maximum and none above it.

To fit the results of observations by Hadley and York¹⁸,

Chew and Goldberger¹⁶ postulated a momentum distribution for carbon:

$$\frac{\alpha}{\pi^2(\alpha^2 + p^2)}$$

where α is a momentum corresponding to a nucleon energy of 18 Mev.

The gaussian distribution is proportional to $e^{-\frac{p^2}{2mE_g}}$

The gaussian is the same in both momentum and x space.

The usual and most obvious approach to the study of nuclear internal momenta is by observation of an interaction with a single nucleon in the nucleus. Results of these interactions are analyzed on a kinematic basis and the energy and/or angular spreads obtained are ascribed to the initial momentum of the nucleons within the nucleus.

Also the deviations in threshold energies for π meson production has

$$\text{where } \Omega = \frac{\pi^2 k_B T}{(A\pi s)E} \quad S = n$$

$$\frac{1}{\pi} \left(\frac{\pi}{2} \right) \approx \frac{1}{\pi} (2\pi \varepsilon) = \frac{\text{not very}}{\text{large}} q$$

$$\frac{1}{2} \left(\frac{\pi - \theta}{\pi} \right) + \frac{1}{2} \left(\frac{2\pi - \theta}{\pi} \right) = \frac{\pi}{2}$$

$$\frac{1}{\epsilon} \left(\frac{A}{\pi \sqrt{\frac{2E}{\hbar^2}}} \right)^{\frac{1}{2}} (\pm \pi \epsilon) = \text{norm} \cdot 9$$

vers 95 et 12 sont vrais sauf si certains critères de chronologie sont
remis en question. Mais il est à noter que le tableau n'a pas été établi
envisageant les deux types de critères.

"Want him to tell you what he thinks?" I asked him with a smile.

$$\frac{\omega}{(\varepsilon_q + \varepsilon_x)^{\varepsilon} \pi}$$

and to take advantage of pathogenic microorganisms to study
the effects of immunotherapy and antibiotic resistance on
the body's immune system. This research has led to the development of
vaccines to prevent many diseases evolved from bacterial cells.
While a new technology is being developed at present, bacterial
functions are considered to be influenced by various factors such as
chemical changes taking place within cells or the external environment.
Thus, our main concern is to analyze certain cell structures and
their interactions with other substances to understand the mechanisms of

been employed to provide information on nucleon momenta.

Hadley and York¹⁸ employed a beam of 90 Mev neutrons from the 184-in. Berkeley synchrocyclotron to produce deuterons from the bombardment of target nuclei. In this case the neutron "picks up" a partner proton from the nucleus and emerges as a deuteron. Since it is necessary for the relative momenta of the proton and the neutron to form a state of the deuteron, the process involves the momentum distribution of both the picked up proton and the deuteron. The observed distribution of deuterons for carbon was explained somewhat arbitrarily by Chew and Goldberger¹⁶. However, Heidman¹⁹ was also able to fit an excited Fermi gas distribution, with a temperature corresponding to an excitation of 9 Mev, to York's data.

High energy proton-proton scattering experiments have been performed by Chamberlain and Segre²⁰, Cladis²¹ and Wilcox²² using 340 Mev protons from the Berkeley 184-in. synchrocyclotron. If the struck proton is assumed to be at rest the nonrelativistic energy of the observed proton is $E_0 \cos^2\theta$ (neglecting the binding energy of the proton and the excitation energy of the residual nucleus) on the basis of the two-body problem where E_0 is the energy of the incident proton and θ is the angle of observation. However, the energy spectrum is smeared out due to the finite momentum of the struck proton. Chamberlain and Segre²⁰ studied pairs of protons emitted in coincidence from lithium as a function of the angle between the two protons. The resulting data could be fitted with a Fermi gas momentum distribution with a maximum energy of 20 Mev.

Cladis²¹ observed the distribution of single protons quasi-elastically scattered from carbon at 40 degrees. The nuclear internal momentum he deduced was best fitted by a Gaussian distribution with a l/e value of about 16 Mev.

Wilcox²² studied by proton-proton coincidences the momentum of the protons emerging from the collisions. He observed coincidences from hydrogen, deuterium, beryllium, lithium and boron. He found the best fit to the experimental data for beryllium was a gaussian momentum distribution with a l/e value of 20 Mev. However, any value between 15 and 25 Mev would fit the data. Fermi (rectangular) and Chew-Goldberger distributions did not fit as well. An excited Fermi distribution would fit within the accuracy of the experiment. He observed qualitative differences between lithium, beryllium and boron. He interpreted these on the basis of the proton distribution in the nucleus.

The shift in the threshold for meson production from free nucleon-nucleon production to nucleon-nucleus production has been used to examine nuclear internal momenta. The threshold energy required in the nucleon-nucleus reaction is lower than that required by the free nucleon-nucleon reaction by the energy corresponding to the momentum of the nucleon in the nucleus as predicted by McMillan and Teller²³. Henley and Huddlestone²⁴ and Henley²⁵ have discussed the nucleonic production of π mesons in complex nuclei using several momentum distributions. The distribution employed affects the production threshold, excitation function and the energy spectrum and angular distribution of the produced mesons as compared with those resulting from collisions with

many authors define the individual's role towards the other
individuals within the group as the extent with which the individual
is able to identify with and to relate to the other individuals
and to act in their behalf. In other words,
the individual's self-identification is defined by the extent
to which he perceives himself as being part of the group.
Individuals' behavior will reflect subjective evaluations
and beliefs about their social environment and the relationships
they have with others (self-concepts). These evaluations and beliefs vary from one to
another individual and from culture to culture and within
one culture from one individual to another. The
self-concept of an individual is often influenced by the
cultural and social environment in which he lives. It is
also influenced by his own experiences and by the
experiences of his family members. The self-concept
of an individual is also influenced by the way he
perceives himself in relation to other people. For example,
if an individual perceives himself as being less intelligent
than others, he may feel inferior and less capable.
The self-concept of an individual is also influenced by
the way he perceives himself in relation to his past
experiences. If an individual has had negative
experiences in the past, he may feel less capable
and less intelligent. The self-concept of an individual
is also influenced by the way he perceives himself
in relation to his future. If an individual feels
that he has a bright future ahead of him, he
may feel more confident and more capable.
The self-concept of an individual is also influenced by
the way he perceives himself in relation to his
present situation. If an individual feels that he
is in a difficult situation, he may feel less capable
and less intelligent. The self-concept of an individual
is also influenced by the way he perceives himself
in relation to his past experiences. If an individual
has had positive experiences in the past, he
may feel more confident and more capable.
The self-concept of an individual is also influenced by
the way he perceives himself in relation to his
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future ahead of him, he may feel more confident
and more capable. The self-concept of an individual
is also influenced by the way he perceives himself
in relation to his present situation. If an individual
feels that he is in a difficult situation, he may feel less
confident and less intelligent.

free nucleons used as targets. Henley found that a gaussian distribution with a $1/e$ value of 19.9 Mev was the best fit to the data. He also used a 0°K Fermi degenerate gas model distribution and a modified Chew-Goldberger distribution. To eliminate the excess high momentum components and the infinite average energy in the Chew-Goldberger distribution he suggested the following modified form:

$$\frac{1}{(\alpha^2 + p^2)^2 (\beta^2 + p^2)^2}$$

where $B = 2.5 \alpha$. This has an average energy of 48.1 Mev and yet fits York's data fairly well. Block, Pasman and Havens²⁶ have performed similar calculations for data obtained at the Columbia cyclotron with an energy of 380 Mev, at first finding the best fit given with the original Chew-Goldberger distribution, but later²⁷ they have used a gaussian distribution with a $1/e$ value of 14 Mev.

Bjorklund, Crandall, Moyer and York²⁸ observed high energy gamma rays resulting from the bombardment of beryllium and carbon with 340 Mev protons from the Berkeley synchrocyclotron in looking for evidence of the π^0 meson. They obtained a fit to the results on the assumption that the center of mass system was moving with $\beta = 0.32$. If the nucleon had been at rest β would have been 0.39. Because the excitation function increases with energy most of the π^0 production comes from nucleons in the target which are moving toward the beam. For $\beta = 0.32$ the energy of such a proton would be 22 Mev.

Steinberger and Bishop²⁹ observed the production of mesons from complex nuclei by use of the Berkeley synchrotron bremsstrahlung

and the species-specific nature of the responses of the animals to the different treatments. The results of the present study indicate that the effects of the different treatments on the behaviour of the animals were similar.

$$-\frac{s(q+s\alpha)^s}{(q+s\alpha)^s}$$

spectrum. The meson energy and direction of production are broadened from that predicted (by a Comptonlike process) because of the bremsstrahlung spectrum and internal momentum distributions. Lax and Feshback³⁰ interpreted their results and found agreement with the Chew-Goldberger distribution.

It should be pointed out that it is difficult within the errors of an experiment to say which momentum distribution really fits best, and even when the type of distribution is decided upon its constants are equally difficult to determine (e.g. Wilcox²², while he chooses 20 Mev for the $1/e$ value of the gaussian momentum distribution of beryllium, he finds any value from 15 to 25 Mev a satisfactory fit to the data). Table I contains a brief summary of investigations devoted primarily to nuclear internal momenta. The last column lists the distributions fitted (if any) to their results.

It is to be noted that the previous experimenters (except Wilcox²²) have studied momentum distributions in a single nucleus. From the above work it appeared worthwhile as a first experiment to investigate whether or not nucleon momenta are the same in different nuclei. From the work of others it appears more difficult to obtain reliable detailed momentum distributions, and there is essentially no information on whether the momentum distributions obtained were specific to the element being studied.

This thesis describes the use of the quasi-deuteron for an experimental study of relative internal momenta. As such the experimental techniques and observations are refinements and extensions to more angles

TABLE I

Summary of Other Investigations of Nucleon Momenta

Author and Reference	Technique	Element	Distribution Applied
Hadley and York ¹⁸	Proton-pickup by neutrons	C	Normal Chew-Goldberger ¹⁶
Chamberlain and Segre ²⁰	Angle between protons in P-P scattering	Li	Fermi ¹⁵ distribution with maximum energy of 20 Mev
Cladis ²¹	"Quasi-elastic" P-P scattering	C	Gaussian with $1/e$ value of 16 Mev
Wilcox ²²	Momentum analysis of one of the protons from P-P scattering coincidences	Li Be B	None Gaussian with $1/e$ value of 20 Mev None

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about useful to writing formal radio in your

Indirect methods	Direct	Aspiration	Indirect methods
Augmentative learning	0	convo-natur- al speech	the child is not
active participation - using DS to express meaning	10	natural speech in natural situation	not always possible
to reduce the child's resistance to DS	5	"child-like" language (e.g. "mama")	possible
DS	10	non-verbal use of DS language	possible
to reduce the child's resistance to DS and DS	10	non-verbal use of DS language + DS gesture combination	possible

and more nuclei of the previous works in this laboratory^{2,12}. As a part of this work it has been necessary to understand the efficiency and angular resolution of the neutron detector employed. This phase of the work has been described separately by Christie³¹.

With all this you would you extend. During each year the total data is summed up over 1,000 measurements.

The neutron detector was of the Geiger-Müller type. For a description of the construction of this detector see either² or³². The axis of passage of the neutron was referred to as a "beam". In this experiment the "beam" corresponded to about 0.6×10^7 hydrogen nuclei. The number of "equivalent" neutrons is the total energy in e.v. which was divided by the neutron photon energy.

The general arrangement of the apparatus is shown in Figure 1. The various components are described below.

6. Counter Techniques

The method of counter techniques employed was of essentially the same type as that used in previous investigations by this laboratory². A low current, ionization chamber was employed to detect a fairly homogeneous group of protons and to distinguish them from other charged particles by means of pulse height discrimination. The counter employed was of filled CH_2 plastic. The front crystal was a thin and the back crystal was 2 inches thick. Both crystals were 5 inches in diameter and were mounted in a frame from the same in Figure 1.

14. The proposed additional value will be taken from the
proposals and consideration of reasonable need and at what point in time
such therefore proposed amount will be sufficient to reduce the
percentage of reasonable additional need and there will be quad-

II. Experimental Equipment

A. Accelerator and Monitor

This experiment was performed with a 340 Mev bremsstrahlung beam from the M.I.T. synchrotron. The synchrotron has a repetition rate of six pulses per second. During each pulse the beam has a duration of about 1200 microseconds.

The monitor employed was of the ionization chamber type. For a description of the calibration of this monitor see Odian³² and Ratz³³. The unit of measure of the monitor was referred to as a "mouse". In this experiment the "mouse" corresponded to about 0.6×10^8 "equivalent quanta". The number of "equivalent quanta" is the total energy in a photon beam divided by the maximum photon energy.

The general arrangement of the experimental equipment is shown in Figure 1. The various components are described below.

B. Counter Telescopes

The method of proton detection employed was of essentially the same type employed in previous investigations in this laboratory². A two crystal scintillation counter was employed to detect a fairly monoenergetic group of protons and to distinguish them from other charged particles by means of pulse height observation. The crystals employed were of Pilot "B" plastic. The front crystal was $\frac{1}{2}$ inch thick and the back crystal was 2 inches thick. Both crystals were 5 inches in diameter and were mounted in a Lucite frame as shown in Figure 2.

Amesbury Deliberations . 11

ANSWER TO QUESTION 5.

visitantes lo con templanza solitaria por la noche en
Santander visto al amanecer cuando ni siquiera era hora de
alba o donde se levanta tan temprano salió el sol y la
ciudad mostró su belleza en su más hermosa belleza. Luego que la
ciudad mostró su belleza en su más hermosa belleza

Figure 1

General Arrangement of Experimental Equipment
(not to scale)

Sociology and Society 21

and the other two groups have been described above. The third group consists of those who have had no formal education or have had only a primary school education. This group is the largest in our sample and has a mean age of 28.5 years. About one-third have a secondary school education and about one-half have had no formal education at all. They are primarily members of the middle-class families, and the highest proportion of them are married. There is an approximate ratio of 1.5 males to females in this group. Most have had some secondary education, although it is not unusual to find a few who have had no formal education at all. They are also primarily members of the middle-class families, and the highest proportion of them are married.

The fourth group consists of those who have had some secondary school education and have had some post-secondary training. This group is the smallest in our sample and has a mean age of 27.5 years. Most have had some secondary education, although it is not unusual to find a few who have had no formal education at all. They are primarily members of the middle-class families, and the highest proportion of them are married. They are also primarily members of the middle-class families, and the highest proportion of them are married.

I. Study

*Social Disadvantage in Employment Areas
(place of work)*

Employment has been defined by many sociologists as a condition where an individual receives payment for his services in exchange for his labour. In this definition, however, there is a serious omission in that it does not take into account the fact that there are many people who receive payment for their services without being employed. For example, a person may receive payment for his services as a self-employed person, or he may receive payment for his services as a member of a family unit, such as a wife or a child. In this case, the person is not employed, but he is receiving payment for his services. This is a very important point, because it is often overlooked in the definition of employment. It is also important to note that the term "employment" is not limited to the workplace, but it can also refer to other areas of life, such as the home, the family, and the community. In this sense, the term "employment" is broader than just the workplace.

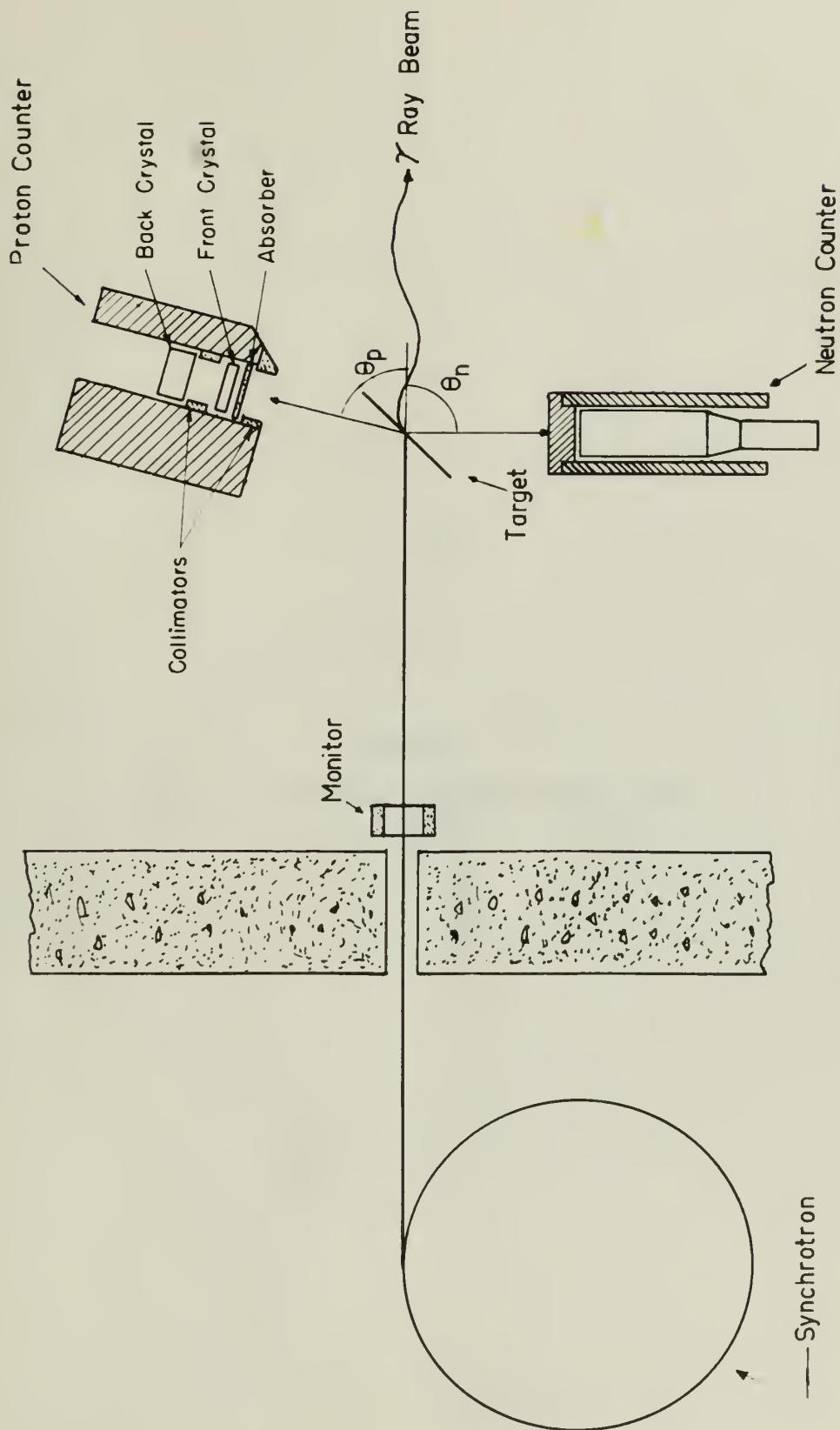


Figure 1

Figure 2

Details of Proton Detector Lucite Frame

Figure 5

Density of proton densities near sun

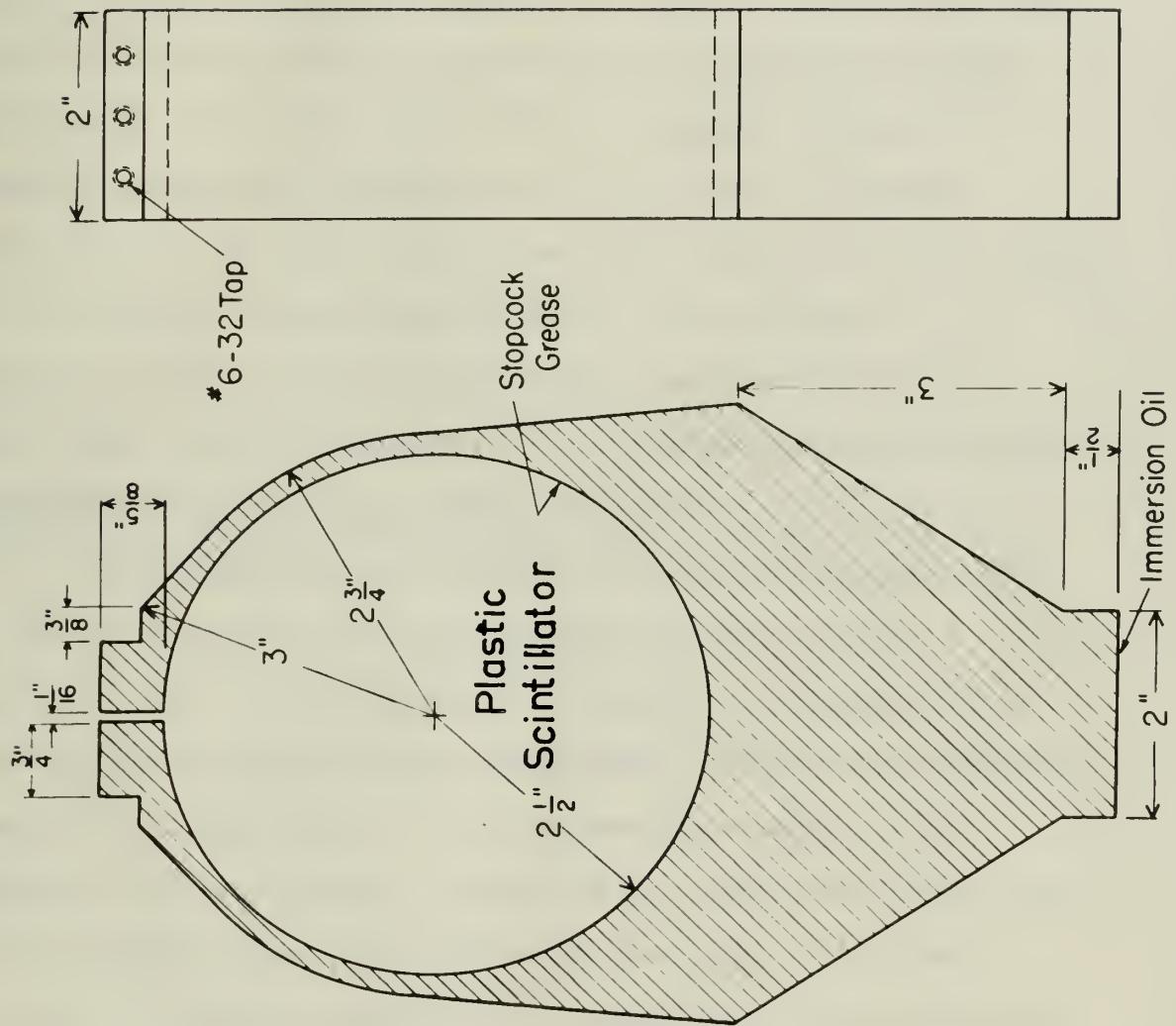


Figure 2

End window (5819) photomultipliers were placed in optical contact with the Lucite frame at a distance of 4 inches from the crystal edge in order to increase the uniformity of the light collection from the crystal. A 0.375 inch brass absorber was placed in front of the front crystal in order to obtain the proper energy group and pulse height relationship in the back crystal. This arrangement corresponded to observing protons with energies from 117 to 142 Mev. Two brass collimators of four inches diameter were also inserted in the telescope. The arrangement of these components may be seen in Figure 1. The energies observed correspond to the peak of the back crystal pulse height curve as shown in Figure 3. For a complete description of the calibration of ΔE for this counter see Odian³².

The neutron counter consisted of an annealed Lucite cylinder four inches in diameter and 12 inches long as shown in Figure 4. It was filled with a scintillating liquid composed of cyclohexylbenzene with 30 grams of p-terphenyl per liter added. A 5819 photomultiplier tube viewed it from the rear. The side was surrounded by a lead cylinder 1-1/8 inches thick. The face of the counter was behind a two inch lead disk to reduce the entrance of gamma rays and charged particles. A complete description and evaluation of this counter has been furnished by Christie³¹.

C. Electronics

A block diagram of the electronics is shown in Figure 5. Four amplifier channels were employed. Discriminators and attenuators were

1. Questions will be asked in order to determine the following:
a) The reason for the visit.
b) The purpose of the visit.
c) The time of the visit.
d) The place where the visit took place.
e) The date of the visit.
f) The name of the person who made the visit.
g) The address of the person who made the visit.
h) The telephone number of the person who made the visit.
i) The name of the organization or company that sent the person to make the visit.
j) The name of the person who received the visit.
k) The name of the person who made the visit.
l) The name of the person who received the visit.
m) The name of the person who made the visit.
n) The name of the person who received the visit.
o) The name of the person who made the visit.
p) The name of the person who received the visit.
q) The name of the person who made the visit.
r) The name of the person who received the visit.
s) The name of the person who made the visit.
t) The name of the person who received the visit.
u) The name of the person who made the visit.
v) The name of the person who received the visit.
w) The name of the person who made the visit.
x) The name of the person who received the visit.
y) The name of the person who made the visit.
z) The name of the person who received the visit.

C. H. Felt & Co.

... i snail at now at moment and to myself said A
true friend is one who always... always sees a friend in him

Figure 3

Pulse Height versus Proton Energy Curves for Proton Telescope Crystals

The protons detected corresponded to pulse heights on the back (second) counter above the bias level indicated. Third counter was not used in this experiment.

the moral condition of society from established, static, static law to
a state where one man's conduct will considerately affect another's safety and
not just instrumentally result in the maximization just measured at some
point on the curve of utility. This kind of law would be a
moral law but would not merely not interfere with the right
of individuals to pursue their own ends. It would be a law that
would not conflict with the need to respect other people's
rights and interests, not merely to maximize some particular
kind of benefit or end in itself.

Figure 3

A graph showing the relationship between the level of freedom (y-axis) and the level of social welfare (x-axis). The graph shows a curve that starts at a low level of freedom and high welfare, rises to a peak, and then begins to decline as freedom increases further. The peak of the curve represents the optimal level of freedom for maximum welfare.

The graph illustrates that there is a trade-off between individual freedom and social welfare. While increasing freedom initially leads to improved welfare, there comes a point where further increases in freedom begin to have a negative impact on welfare. This is because as freedom increases, it may lead to behaviors that harm others or damage society. For example, if people have too much freedom, they might choose to pollute the environment or harm animals. These actions can negatively affect the welfare of others and the overall well-being of society. Therefore, it is important to find the right balance between individual freedom and social welfare, so that both can coexist harmoniously.

Individual rights and social welfare

are often thought to be in conflict with each other. However, this is not always the case. In fact, individual rights and social welfare are interconnected and complementary. Individual rights allow people to live their lives freely and independently, which in turn promotes social welfare by creating a more stable and prosperous society. Conversely, social welfare policies can protect individual rights by providing basic necessities such as food, shelter, and healthcare to those who are vulnerable or marginalized. By ensuring that everyone has access to these basic needs, society can create a more just and equitable environment for all individuals.

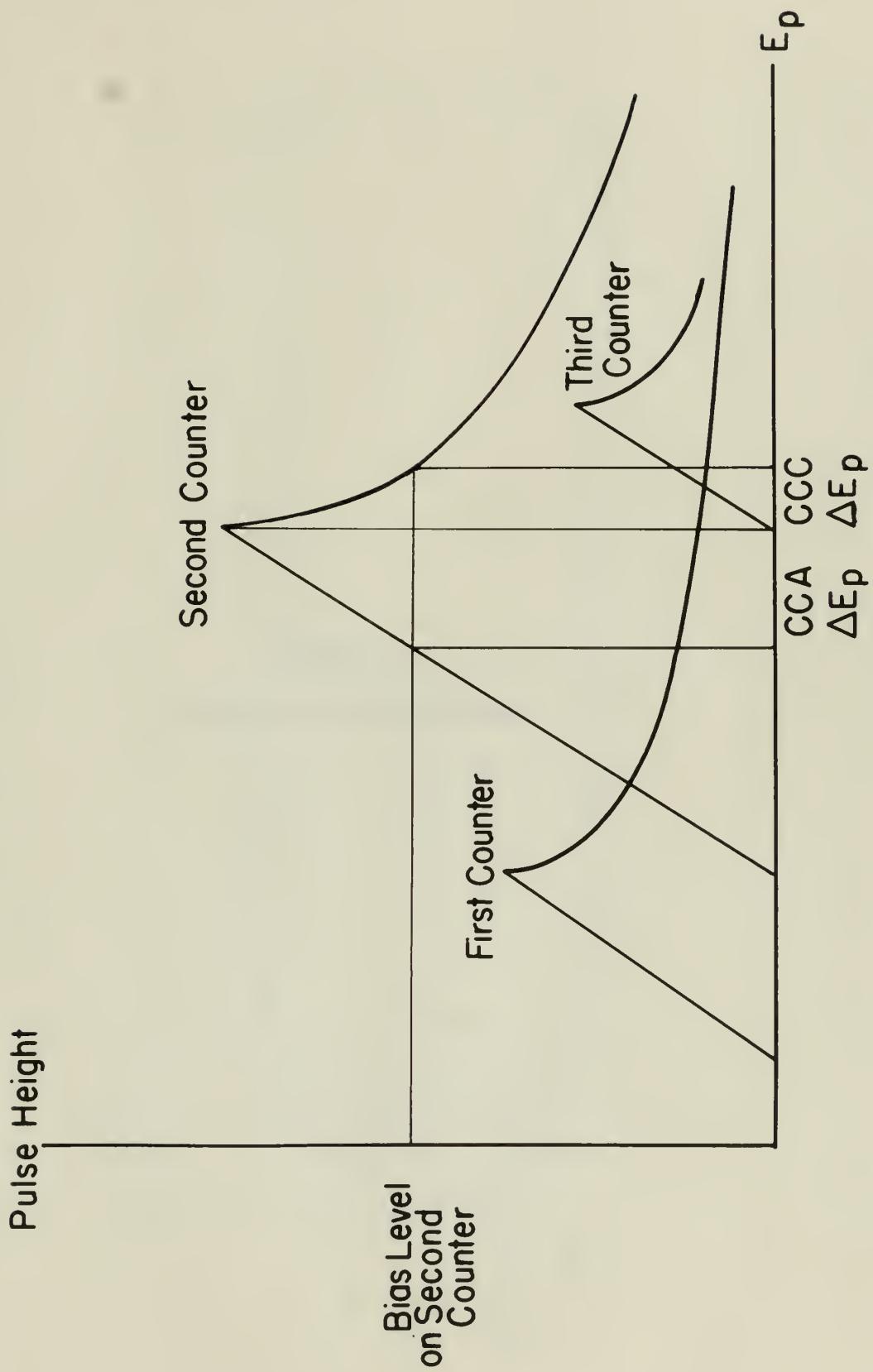


Figure 3

Figure 4
Details of Neutron Detector

A small
percentage
of the population
will be infected

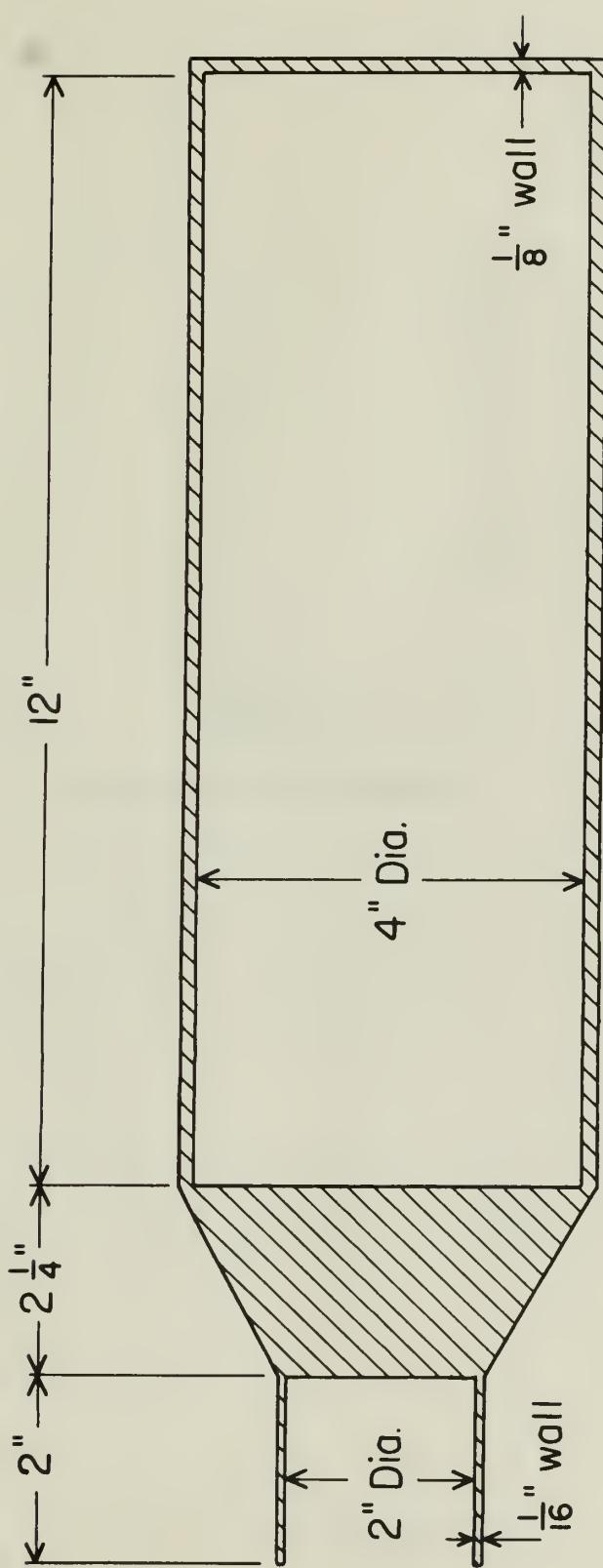


Figure 4

Figure 5
Electronics Block Diagram

2. *anagyrus*
anagyrus *leucophaeatus*

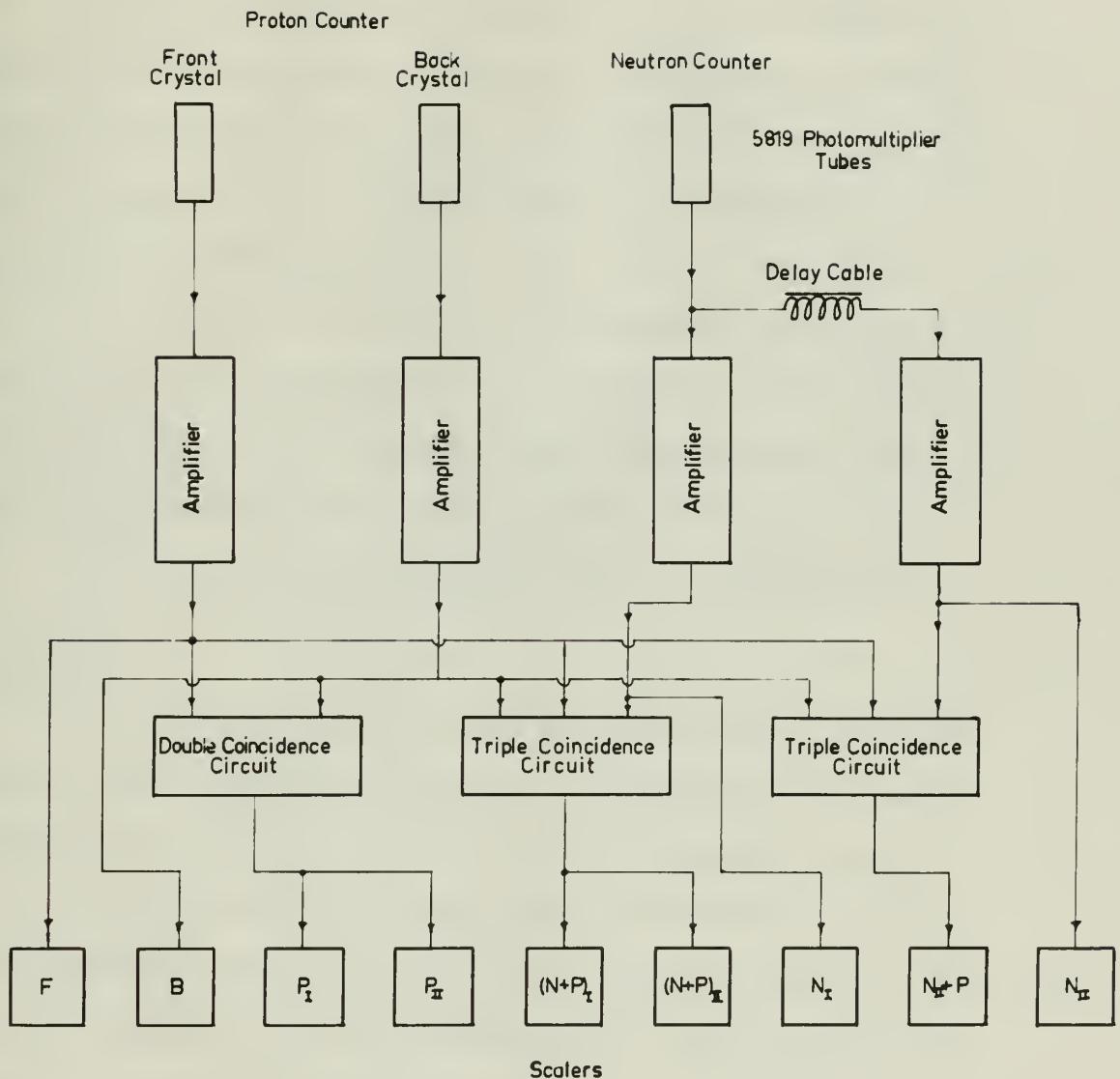


Figure 5

employed on the amplifiers to select the pulse height to be observed. The channels for the front and back crystals of the proton telescope are connected through a (two-fold) coincidence circuit to give the proton count. The neutron signals were sent to the regular neutron channel (Neutrons_I) and also through a 56 meter (0.3 microsecond) RG-63/U cable to another amplifier channel (Neutrons_{II}) for measuring the accidental counting rate. Each of these neutron channels was connected to a separate triple coincidence circuit with the front and back crystals of the proton counter. This arrangement gave the total neutron-proton coincidence rate and simultaneously the accidental neutron-proton coincidence rate. As a check two scalers were employed on the proton and the neutron-proton coincidence channels. The resolving time, 2τ , of the coincidence circuits was about 0.17 microseconds.

D. Targets

The targets employed in this work were water, heavy water, lithium, carbon, aluminum and copper. A description of the targets is found in Table II. It was desired to have targets of exactly the same energy loss for 130 Mev protons (i.e. $\Delta E = 20$ Mev). However, time limitations compelled the use of the targets at hand with the result that this condition was not always realized. The energy losses for targets perpendicular to the proton counter are listed in column 5 of table II.

A special lithium metal target was cast in a dry box under a helium atmosphere. Due to uneven contraction on cooling it had to

According to the results of the scenario analysis, the highest contribution to the reduction of greenhouse gas emissions is made by the energy sector, which is followed by the transport sector. The energy sector's contribution is due to the implementation of energy efficiency measures and the transition to renewable energy sources. The transport sector's contribution is due to the implementation of measures to reduce fuel consumption and the promotion of public transportation. The industry sector also makes a significant contribution to the reduction of greenhouse gas emissions, mainly through the implementation of energy efficiency measures and the use of cleaner production technologies. The agriculture sector's contribution is due to the implementation of measures to reduce methane emissions from agriculture and the promotion of sustainable land management practices. The waste sector's contribution is due to the implementation of measures to reduce greenhouse gas emissions from waste management and the promotion of recycling and composting.

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the following sentence is the most likely to be true:
"The probability of a person being infected with HIV is
higher than the probability of a person being infected with
Hepatitis C." This statement is true because the probability
of a person being infected with Hepatitis C is approximately
0.001% while the probability of a person being infected with
HIV is approximately 0.0001%. Therefore, the probability of a
person being infected with Hepatitis C is higher than the
probability of a person being infected with HIV.

TABLE II

Target Data

Substance	Z	A	Target Thickness m/cm ²	Energy Loss(ΔE) for 130 Mev pro- tons (Mev)	Target Angle		
					θ_N^*	θ_T for θ_N^*	θ_T for θ_N^*, θ_N'
Lithium	3	6.94	1.90	10.5	100	134	63
Carbon	6	12.01	3.10	18.0	96	140	50
Light Water			2.18	17		140	Not run above 100
Heavy Water			2.35	19		140	100
Aluminum	13	26.98	3.35	17.2	100	140	50
Copper	29	63.54	4.38	19.2	96	140	50

* θ_N^* is the neutron counter angle at which the target angle is shifted.

The angles shift for the various targets are listed for the last column of TABLE II. The shift angles change the neutron counter angle at which the targets were run. These angles were kept

The angles shift for the various targets are listed for the last column of TABLE II. The shift angles change the neutron counter angle at which the targets were run. These angles were kept

Date			Period (A)	Period (B)	Period (C)	Period (D)	Period (E)	Period (F)	Period (G)
Year	Month	Day	Start	End	Start	End	Start	End	Start
2023	July	01	0.01	0.01	00.0	00.0	00.0	00.0	00.0
2023	July	02	0.01	0.01	00.0	00.0	00.0	00.0	00.0
2023	July	03	0.01	0.01	00.0	00.0	00.0	00.0	00.0
2023	July	04	0.01	0.01	00.0	00.0	00.0	00.0	00.0
2023	July	05	0.01	0.01	00.0	00.0	00.0	00.0	00.0
2023	July	06	0.01	0.01	00.0	00.0	00.0	00.0	00.0
2023	July	07	0.01	0.01	00.0	00.0	00.0	00.0	00.0
2023	July	08	0.01	0.01	00.0	00.0	00.0	00.0	00.0
2023	July	09	0.01	0.01	00.0	00.0	00.0	00.0	00.0
2023	July	10	0.01	0.01	00.0	00.0	00.0	00.0	00.0

be machined to a thickness thinner than that anticipated in order to obtain a uniform surface. It was wrapped in thin aluminum foil, and the seams were dipped in paraffin.

The heavy water and light water targets were in thin walled plastic cells. Unfortunately the tension was different in the walls of the two cells. This led to the H₂O cell being 2 percent thicker than the D₂O cell. The other samples were bare metal plates. All targets were larger than the beam.

In general targets were set at about 140 degrees to the beam. In order to keep the neutron scattering negligible in the target, the target angle was shifted to about 40 degrees when the neutron counter was at angles larger than about 100 degrees.

As pointed out in Christie's³¹ analysis of the deuterium data, the finite size of the target adds to the angular resolution associated with the geometry. It was desired to keep the angular resolution the same for the various elements. A graphical analysis was made of the projection (on a perpendicular to the axis of the proton telescope) of the beam's intersection with the target. This was a function of the thickness of the target. The criterion chosen was that the proton telescope should observe a three inch projection of the portion of the target in the beam.

The angles used for the various targets are listed in the last columns of Table II. The sixth column lists the neutron counter angle at which the target angle was shifted. These angles were set

of water at temperature just over twenty centigrade & at temperature of
less than animals shot at higher rate of carbon dioxide & carbon
dioxide at twenty seven degrees with
water which was injected under skin less water caused less
allowance of sweating and cooling and respiration. When animals
quadruped animals & garter lizards also lost a lot of heat after animals were set to
the activity. Lizards and frogs before taking water like it & did not
need any more regular water injection
and add no more than twice as you know about between 10
and 15 days but if daily injection becomes necessary will consist of two to three ml
injection mixture and needs stronger Ca lactate than when injection
consists of 1000 drops and crystal solutes in one
and distinguish only by strength. Recommended of two batches of
bactericidal mixture which one of these injected will be more soluble and
will not affect salinity will consist of bacterial mix 1000 drops, and 1000
ml to whom are added 1000 drops & calcium lactate and will cause
(approximately 1000 drops will be also half of calciolactate & so) combination
add to antibiotic & now will deposit with this combination a band and 10
injection will have one more advantage with injection will be possible
to introduce into the antibiotic and avoid a systemic blood infection
which will not injure
and all bacteria are destroyed and will have edges off
resistant membrane will which cannot dissolve yet. It adds to antiseptic
one more antibiotic which will not injure any tissue because it does

within about one degree on a protractor that was centered in the beam. The protractor was centered by means of x-ray photographs of the beam.

The counter assembly was designed to withstand the voltage of 100 kilovolts which cut the high voltage transformer and thereby automatically disconnects the low voltage balance. The high voltage was measured at the 200 millimeter radius where the maximum exposure at the center of the 500 millimeter radius circle was measured at the center of the 500 millimeter radius circle of the final utilization spacing. The counting rate of both the track ion loss counter was checked. The second counter was compensated to count the 4-7 millimeter equivalent minor tracks by extrapolating from data in the literature of the counter, and reading the counting rate in the current counter, called (Bentley), which were used for setting the high voltage on the particle flow counter. All measurements had voltages of the positions were fixed with a potentiometer. Voltage readings were made with an electrostatic voltmeter.

III. TESTS OF ACCURACY

An accuracy test was performed to evaluate the effect of the detector on the angular resolution of the counter. This was done by introducing a delayed signal derived by coincidence with the track and logic channels of the proton counter. The delayed channel showed (Bentley) the coincident rate at a lower bias and hence higher counting rate than the normal position channel (Bentley) for added trigger statistics. The angular resolution counter was connected to the track counter so that each counter recorded the total rate of the track in a given

and all the time we have had to do nothing but go about and find
ourselves in little quiet places to think up new inventions and
make them work. I am not going to tell you what we have been doing,
but I will tell you what we have been thinking about. We have been
thinking about how to make our machines work better and faster.
We have been thinking about how to make our machines work
better and faster. We have been thinking about how to make our
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thinking about how to make our machines work better and faster.

III Experimental Procedure

A. Standards

Radioactive sources were employed as standards in order to minimize drift of the high voltage supplies and other electronic components. On the proton telescope the brass absorber was removed and the 500 microcurie radium source was suspended at the center of the target side of the front collimator opening. The counting rates of both the front and back crystals were observed. The neutron counter was standardized by inserting a 2 microcurie cobalt-60 source inside the cylindrical lead shield to the mid-point of the counter, and reading the counting rate on the normal neutron channel (Neutrons_I). Adjustments were made by varying the high voltage on the photomultiplier tubes. All discriminator bias settings on the amplifiers were fixed with a potentiometer. Voltage readings were made with an electrostatic voltmeter.

B. Treatment of Accidentals

As previously mentioned an evaluation of the number of accidental neutron-proton coincidences was made by employing a delayed neutron channel in coincidence with the front and back channels of the proton counter. The delayed neutron channel (Neutrons_{II}) was generally run at a lower bias and hence higher counting rate than the normal neutron channel (Neutrons_I) to obtain better statistics. The accidental neutron-proton counts were normalized to the normal neutron-

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et alii et obstante devenire eis sententia proposita

Probable by about 1927.

In addition to the following in *Geophagus acutus* sp. n.,
there is evidence of some other morphological modifications. In addition
to a distinct head bar there are other modifications in *Geophagus acutus*
and (*Geophagus*) *lunatus* reported by Günther along with
the fact that *Geophagus acutus* has said bar as very distinct,
as well as other plates of (*Geophagus*) *lunatus* which
are arranged in a regular series of horizontal rows between anterior and posterior

proton counts by the following proportion:

$$\frac{(N_{\pi}+P)_{\text{normalized}}}{N_{\pi}+P} = \frac{N_I}{N_{\pi}}$$

The normalized accidental counts were then subtracted from the total neutron-proton counts to give the true number of neutron-proton coincidences for the run.

C. Kinematics

Employing relativistic momentum and energy conservation the proton counter energy and angle were set so as to make the proton angle 90 degrees in the center of mass coordinates of the deuteron¹⁴. For 130 Mev protons this angle in the laboratory was 76 degrees. This meant the neutron angle in center of mass coordinates was 90 degrees with the consequence that it would also be 76 degrees in the laboratory. However, due to the finite size of the target and orientation relative to the two counters the peak of the neutron angular distribution should occur at a slightly larger angle as shown by Christie³¹. The observed peak of the neutron angular distribution occurred at 78 degrees in the laboratory coordinates.

D. Description of Runs

Runs were normally made first at a (protractor) setting of 73 degrees for the neutron counter. This was followed by a run on either side for the "wings" of the neutron angular distribution, and then by runs at ten degree increments to establish the shape of the distribution. One or more subsequent runs were made at 78 degrees as a check on

valutazione approfondita dell'ambiente naturale

$$\frac{M}{M+N} = \text{percentuale} (\text{Gruppo N})$$

Salvo altri dati aggiuntivi, molti anni sono passati prima che
possa accettare le tassezioni come una delle cause principali
della diminuzione della popolazione. Non solo non è possibile
di sapere con certezza se questo è vero, ma

risultato 2

non è chiaro se queste tassezioni siano effettive per gli animali.

Andrea dice che al di là del fatto che le tassezioni riducono notevolmente l'area disponibile per le specie elette, il loro
risultato è che le specie elette si spostano verso le aree più ricche di cibo.
Questo è un problema che si risolve in alcune maniere: ad esempio,
per esempio, con la creazione di nuovi habitat o di nuove
aree protette, oppure con la creazione di nuovi habitat o di nuove
aree protette. Il risultato di questo è che le specie elette hanno
più spazio per crescere ed a loro volta possono crescere più
rapidamente.

risultato 3

Per le piante (vegetazioni) è più difficile fare riferimenti perché
tutte le piante sono molto simili. Tuttavia, potrebbe essere
che queste piante abbiano diversi valori per le piante. Ad esempio,
potrebbero essere utilizzate per la produzione di strumenti musicali
o per la produzione di farmaci. Per questo motivo, è importante
che ci sia un grande numero di piante.

operations. Runs were made for the equivalent of 2000 normal "mice".

4. Reduction of Data

*Due to different collimations of the bremsstrahlung beam the absolute value of the "mouse" was changed several times (see description of monitor in Section II A). It should be pointed out that the proton count and not the number of "mice" was used as the normalizing factor for plotting data.

The data were then plotted on the same conditions for the number of "mice" for each run. The total count of 200 mice gives the normalized count/absolute proton obtained by the monitor yields. Finally the proton count should approach 1.00000. By iteration of this proton yield, we can normalize the dose necessary to reach 1.00000. Due to the proton density, due to the surface charge and geometry, errors in the placement of the doses, errors in the monitoring system and inaccuracy in the calculated "dose" per spot. The nature of the R/C pattern with penetrable doses which are possible without exceeding such the initial dose error.

5. Discussion

The energy-spectrum relationships for these nuclei are assumed to be the same as those for carbon and the values which have been given here are not only for the liquid, a comparison perpendicular according to the following scheme gives the factors which are important:

$$\frac{R_{\text{H}}(e) = 0.07 R_{\text{C}}(e)}{R_{\text{H}}(e) = 0.07 R_{\text{C}}(e)}$$

See Section III D.

"cold" leaves out to facilitate animal movement and minimize

advances and your personal risk to annihilate yourself or some
to maintain your health before any "heat" will be felt
noting at first the location of birds etc. All patient in various
local positions as they are "cold" to remain and you can stand
and go to work.

When you have been in the sun for a long time you will notice
your skin will feel hot to the touch. This is a good sign as it
means that your body is working hard to cool itself down. If you
feel this heat you should move to a shaded area or a cool place
such as a porch or a window. You should also drink water and eat
light foods such as fruits and vegetables. If you feel
yourself getting too hot you should take a cold shower or
bathe in cold water. This will help cool your body down and prevent
you from getting sick.

If you are still feeling hot after taking a cold shower or bath
you should seek medical attention. You should also drink
water and eat light foods such as fruits and vegetables. If you
feel your self getting too hot you should take a cold shower or
bathe in cold water. This will help cool your body down and prevent
you from getting sick.

IV. Analysis of Data

A. Reduction of Raw Data

A typical set of readings is shown in Table III to illustrate the information recorded in each run. Each count reading was divided by the number of "mice"** as a check on reproducibility. Summary tables of the data for each element were made up. The more important parts of these are reproduced in Tables IVa through IVf. These tables show the actual total counts observed and are not normalized for the number of "mice" in each run. The last column of each table gives the corrected coincidence counts divided by the proton count. Ideally the proton count should have been a constant. By dividing by the proton rate, we are correcting for the necessary changes in target position, drifts in the proton counter, drifts in the machine energy and intensity, errors in the placement of the target, errors in the monitoring system and variations in the number of "mice" per run. The values of the $\frac{N+P}{P}$ ratios were generally almost always reproducible within statistics when the points were rerun.

B. Deuterium

The neutron-proton coincidences in heavy water are assumed to be due to both the deuterium and the oxygen while those from light water are due only to the oxygen. A subtraction performed according to the following formula gave the desired values for deuterium:

$$\frac{(N+P)_{D_2O} - 0.98(N+P)_{H_2O}}{P_{ave\ D_2O} - 0.98 P_{ave\ H_2O}}$$

*See Section IIID.

*Constitutive and developmental regulation of the *luteinizing hormone receptor* gene by *luteinizing hormone*.*

6-16 went to 10² 3rd St. A.

content of the slide is quite significant for looking at

belebten und aufgeladen waren waren nicht nur dass der Bahnkörper selbst eine gewisse Spannung aufwies, sondern auch die Spannung zwischen dem Bahnkörper und den anderen Teilen des Fahrzeugs. Diese Spannungen konnten durch die Reibung zwischen den Teilen des Fahrzeugs verhindert werden, was wiederum durch die Reibung zwischen dem Bahnkörper und den anderen Teilen des Fahrzeugs verhindert werden konnte. Dies war jedoch nicht der einzige Grund für die Spannung im Bahnkörper, sondern auch die Spannung zwischen dem Bahnkörper und den anderen Teilen des Fahrzeugs war ein weiterer Faktor, der die Spannung im Bahnkörper verstärkte.

Document 2: A letter from the Secretary of State to the Governor of New York, dated October 10, 1776.

$$\frac{C_{2H}(14N) \cdot 0.01}{C_{2H}^{14N} \cdot 0.01} = \frac{C_2^1 C^{14N}}{C_2^{14N} C^1}$$

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TABLE III
Samples of Data Recorded During Runs

Mice*	Target	Counter Angles		Target Angle (θ_T)	Front Channel Clicks# (F)	Back Channel Count# (B)	Proton Counts#		Neutron Clicks#		Neutron-Proton Coincidence Counts#						
		Proton (θ_P)	Neutron (θ_N)				Scaler I (P_I)	Scaler II (P_{II})	Normal (N_I)	Delayed (N_{II})	Total	Scaler I (N_{I+P}) _I	Scaler II (N_{I+P}) _{II}				
1500	C	76	88	140	0686	6333 ¹²	839 ⁹	160 ⁷	3849	3656	72 ²²	00 ²²	61 ⁸				
					0026	6159	717	040	3425	3166	72	00	61				
<hr/>																	
Counts/mouse					0.440	7.44	5.17	5.13	0.283	0.327	0.0147	0.0147	0.0053				
3000	C	76	88	140	1336	6507 ⁵³	959 ³¹	280 ²⁵	4257	5782	72 ⁴⁸	00 ⁴⁸	61 ⁹				
					0026	6159	717	040	3425	3166	72	00	61				
<hr/>																	
Counts/mouse					0.437	7.44	5.18	5.13	0.277	0.872	0.016	0.016	0.003				
1500	C	76	108	50	1887	6653 ⁴⁵	617	381 ³⁹	4607	7481	73 ⁷	00 ⁷	61 ⁴				
					1336	6508	959	280	4337	5788	73	00	61				
<hr/>																	
Counts/mouse					0.367	6.22	4.36	4.33	0.180	1.13	0.0047	0.0047	0.0027				
3000	C	76	108	50	2421	6797 ³	160 ³²	480 ⁵⁹	4866	9105	73 ¹⁵	00 ¹⁵	61 ⁶				
					1336	6508	959	280	4337	5188	73	00	61				
<hr/>																	
Counts/mouse					0.362	6.17	4.31	4.29	0.176	1.11	0.005	0.005	0.002				

* See Section III D

Scale of 64 scalers were used. When counting rates sufficiently high only the number of clicks was recorded. 1 click = 64 counts.

Runs were generally stopped in the middle and readings taken as a check on reproducibility

Il III milione nel
mese di febbraio
e questo è seguito
villaggio dopo villaggio

TABLE IVa

Summary of Heavy Water Data

Neutron Counter Angle (θ_N)	Proton Counts (P_I)	Neutron - Proton Coincidences		
		Total (N+P)	Corrected ^a	Normalized ^b Corrected
63	12224	37	29.6	24 \pm 5
68	12180	68	62.5	51 \pm 7
73	12610	127	121.2	96 \pm 9
78	12235	132	126.7	103 \pm 10
78	12669	146	140.2	111 \pm 10
*78	24904	278	266.8	107 \pm 7
83	12600	79.5	76.1	60 \pm 7
83	13546	93	87.7	65 \pm 7
*83	26146	172.5	163.8	63 \pm 5
88	12245	47	43.5	36 \pm 6
88	12821	43	37.7	29 \pm 5
*88	25066	90	81.1	32 \pm 4
Ave	12570			

$$a \text{ Corrected Neutron-Proton Coincidences} = (N_4 P) - (N_{II_4} P) \frac{N_I}{N_{II}}$$

$$b \text{ Normalized corrected neutron-proton coincidences} = \frac{1}{P_I} \times \text{Corrected Coincidences}$$

* Combination of runs above at same angle

Taken with proton counter at 76 ± 5 degrees and with proton energy of 130 ± 12 Mev.

See Table II for data on Target

11 DEB

small white wavy 2-3 mm.

Termo de desenvolvimento	Referência	Total (%)	Percentual (%)	Percentual estimado (%)
E 2-48	0.05	78	45.52	48
T 2-57	1.25	60	33.33	36
F 2-67	0.151	72	40.61	43
ox 2-69	1.263	52	28.95	31
DI 2-71	0.041	66	36.67	37
T 2-70	0.385	87	47.94	50
T 2-70	1.38	87	47.94	50
T 2-78	1.58	88	48.82	52
E 2-80	0.021	6.575	3.60	3.80
S 2-82	1.24	74	40.21	43
T 2-82	1.32	84	45.83	48
A 2-85	1.18	68	36.84	39

$\frac{1}{2} \cdot 10^4 = 5 \mu$ is a reasonable approximation.

Consequently, the combination motor-magnetic material is utilized to obtain the maximum torque per ampere of current in the motor.

TABLE IVb
Summary of Lithium Data

Neutron Counter Angle (θ _N)	Proton Counts (P _I)	Neutron - Proton Coincidences		
		Total (N+P)	Corrected*	Normalized# Corrected
38	4505	3	1.6	4± 5
48	6829	6	4.7	7± 4
58	6798	26	26	38± 8
68	4516	45	40.9	91± 16
78	4476	49	47.6	106± 16
78	3344	27	25.6	77± 16
78	3960	32	30.7	78± 15
*78	11780	108	103.9	88± 9
88	6407	34	28.6	45± 10
98	8187	24	24	29± 6
108	7471	8	8	11± 4
118	3958	2	0.5	1± 5

* Corrected Neutron-Proton Coincidences = (N+P) - (N_{II}+P) $\frac{N_I}{N_{II}}$

Normalized corrected neutron-proton coincidences = $\frac{1}{P_I} \times$ Corrected Coincidences

* Combination of runs above at same angle

Taken with proton counter at 76 ± 5 degrees and with proton energy of 130 ± 12 Mev.

See Table II for data on Target

५८. अप्र०

विवरणीय तात्पुरता

संक्षिप्त नाम - संकेत	विवरणीय नाम	विवरणीय नाम	विवरणीय नाम	विवरणीय नाम
१. शू	०.१	८	२०६	९८
२. शू	०.१	८	२०७	९९
३. शू	०८	८५	२०८	९०
४. शू	०.०८	८६	२०९	९१
५. शू	०.०८	८७	२१०	९२
६. शू	०.०८	८८	२११	९३
७. शू	०.०८	८९	२१२	९४
८. शू	०.०८	९०	२१३	९५
९. शू	०.०८	९१	२१४	९६
१०. शू	०.०८	९२	२१५	९७
११. शू	०.०८	९३	२१६	९८
१२. शू	०.०८	९४	२१७	९९
१३. शू	०.०८	९५	२१८	१००
१४. शू	०.०८	९६	२१९	१०१
१५. शू	०.०८	९७	२२०	१०२
१६. शू	०.०८	९८	२२१	१०३
१७. शू	०.०८	९९	२२२	१०४
१८. शू	०.०८	१०	२२३	१०५

$\frac{1}{2} \times (१०५) = ५२.५ = \text{संक्षिप्त नामी-संकेत बद्धता} \text{ } \in$
II

इसलिए $\frac{1}{2} \times \frac{1}{2} = \text{संक्षिप्त नामी-संकेत बद्धता} \text{ } \in$
संकेतीय नामी-संकेत बद्धता

संकेतीय नामी-संकेत बद्धता $= ५२.५ \pm ०५.५$ को लिए
जिसका अनुभव इसलिए $= ५७.०$ होगा।

अतः इसका अनुभव II में लिए जाएगा।

TABLE IVc

Summary of Carbon Data

Neutron Counter Angle (θ_N)	Proton Counts (P _I)	Neutron - Proton Coincidences		
		Total (N+P)	Corrected	Normalized [#] Corrected
38	13248	14	8.4	6.3 ± 2.9
48	8020	9	8.0	10 ± 4
58	13785	30	26.1	19 ± 4
68	13684	43	38.9	28 ± 5
78	13298	53	46.3	35 ± 6
78	15385	53	51.6	34 ± 5
*78	28683	106	101.8	36 ± 4
88	15519	48	45.1	29 ± 5
98	12480	24	22.6	18 ± 4
108	12926	15	14.0	11 ± 3
118	20300	15	11.8	5.8 ± 1.9
128	12129	2	2	1.6 ± 1.6

* Corrected Neutron-Proton Coincidences = $(N+P) - (N_{II}+P) \frac{N_I}{N_{II}}$

Normalized corrected neutron-proton coincidences = $\frac{1}{P_I} \times \text{Corrected Coincidences}$

* Combination of runs above at same angle

Taken with proton counter at 76 ± 5 degrees and with proton energy of 130 ± 12 Mev.

See Table II for data on Target

AV. 3.300

COMBINATION OF QUOTIENTS

COMBINATION NUMBER - INDEX	NUMBER	Fraction (%)	DECIMAL (%)	COMBINATION NUMBER (%)
1.2 ± 0.4	3.0	31	0.311	31
2 ± 0.2	0.9	9	0.090	9
3 ± 0.1	1.00	00	0.000	00
4 ± 0.0	0.98	64	0.064	64
5 ± 0.0	0.95	61	0.061	61
6 ± 0.0	0.92	55	0.055	55
7 ± 0.0	0.89	50	0.050	50
8 ± 0.0	0.86	46	0.046	46
9 ± 0.0	0.83	42	0.042	42
10 ± 0.0	0.80	39	0.039	39
11 ± 0.0	0.77	35	0.035	35
12 ± 0.0	0.74	31	0.031	31
13 ± 0.0	0.71	27	0.027	27
14 ± 0.0	0.68	23	0.023	23
15 ± 0.0	0.65	19	0.019	19
16 ± 0.0	0.62	15	0.015	15
17 ± 0.0	0.59	11	0.011	11
18 ± 0.0	0.56	7	0.007	7

$\frac{1}{10}(10 \pm 0) = 1.000$ = combination number-number between 1 & 10
 $\frac{1}{10}(10 \pm 0.1) = 0.990$ = combination number-number between 9 & 10
 $\frac{1}{10}(10 \pm 0.2) = 0.980$ = combination number-number between 8 & 9
 $\frac{1}{10}(10 \pm 0.3) = 0.970$ = combination number-number between 7 & 8
 $\frac{1}{10}(10 \pm 0.4) = 0.960$ = combination number-number between 6 & 7
 $\frac{1}{10}(10 \pm 0.5) = 0.950$ = combination number-number between 5 & 6
 $\frac{1}{10}(10 \pm 0.6) = 0.940$ = combination number-number between 4 & 5
 $\frac{1}{10}(10 \pm 0.7) = 0.930$ = combination number-number between 3 & 4
 $\frac{1}{10}(10 \pm 0.8) = 0.920$ = combination number-number between 2 & 3
 $\frac{1}{10}(10 \pm 0.9) = 0.910$ = combination number-number between 1 & 2
 $\frac{1}{10}(10 \pm 1.0) = 0.900$ = combination number-number between 0 & 1

TABLE IVd
Summary of Light Water (Oxygen) Data

Neutron Counter Angle (Θ_N)	Proton Counts (P_I)	Neutron - Proton Coincidences		
		Total ($N + P$)	Corrected ^a	Normalized ^b Corrected
68	10694	32	26.2	25 \pm 5
78	10527	46	38.1	36 \pm 7
88	10646	25	22.4	21 \pm 5
ave	10622			

* Corrected Neutron-Proton Coincidences = $(N + P) - (N_{II} \cdot P) \frac{N_I}{N_{II}}$

Normalized corrected neutron-proton coincidences = $\frac{1}{P_I} \times \frac{\text{Corrected}}{\text{Coincidences}}$

Taken with proton counter at 76 ± 5 degrees and with proton energy of 130 ± 12 Mev.

See Table II for data on Target

THE TEST

TEST IN WHICH TEST (TEST) IS

Constituent Concentration (%)	Concentration (%)	Concentration - Before Combustion	Concentration (%)	Concentration (%)	Concentration (%)
2.2	2.05	25	29.92	7.95	9.8
2.4	2.35	25	29.25	7.95	9.5
2.2	2.05	25	29.95	7.95	9.8

$$\text{Concentration after combustion} = \frac{\text{Concentration before combustion} + (\%)}{100}$$

Concentration after combustion = $\frac{\text{Concentration before combustion} + (\%)}{100}$ x 100

Concentration after combustion = $\frac{\text{Concentration before combustion} + (\%)}{100}$ x 100

Concentration after combustion = $\frac{\text{Concentration before combustion} + (\%)}{100}$ x 100

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Concentration after combustion = $\frac{\text{Concentration before combustion} + (\%)}{100}$ x 100

Concentration after combustion = $\frac{\text{Concentration before combustion} + (\%)}{100}$ x 100

TABLE IV
Summary of Aluminum Data

Neutron Counter Angle (θ_N)	Proton Counts (P_I)	Neutron - Proton Coincidences		
		Total (N^+P)	Corrected ^a	Normalized [#] Corrected
38	14663	25	15.1	10 \pm 4
58	15104	19	13.6	9 \pm 3
68	14577	35	30.4	21 \pm 4
78	14464	37	32.9	23 \pm 4
78	14205	40	35.9	25 \pm 5
*78	28669	77	68.8	24 \pm 3
88	13963	27	23.4	17 \pm 4
88	14135	36	32.4	23 \pm 5
*88	28098	63	55.8	20 \pm 3
98	12620	28	25.1	20 \pm 4
98	12646	18	15.1	12 \pm 4
*98	25266	46	40.2	15.9 \pm 2.8
108	12717	14	11.3	9 \pm 3
118	12975	12	9.5	7.3 \pm 2.9
128	12556	9	6.7	5.3 \pm 2.7

^a Corrected Neutron-Proton Coincidences = $(N^+P) - 0.005 N_I$

[#] Normalized corrected neutron-proton coincidences = $\frac{1}{P_I} \times$ Corrected Coincidences

*Combination of runs above at same angle

Taken with proton counter at 76 ± 5 degrees and with proton energy of 130 ± 12 Mev.

See Table II for data on Target

1975.09.17

Сводка по гравиметрии

номера объектов	координаты — высоты	номер изделия	номер изделия второй стороне
4 ± 01	4.21	28	1254
5 ± 01	4.31	41	10721
4 ± 12	4.06	73	17545
4 ± 05	4.07	74	16004
2 ± 05	2.80	61	10041
2 ± 45	2.64	57	9226
4 ± 15	4.26	75	12975
2 ± 05	2.80	76	12544
2 ± 05	2.80	77	12545
4 ± 05	4.22	66	10706
4 ± 05	4.22	67	10705
4 ± 05	4.22	68	10704
4 ± 05	4.22	69	10703
4 ± 05	4.22	70	10702
4 ± 05	4.22	71	10701
4 ± 05	4.22	72	10700
4 ± 05	4.22	73	10705
4 ± 05	4.22	74	10704
4 ± 05	4.22	75	10703
4 ± 05	4.22	76	10702
4 ± 05	4.22	77	10701
4 ± 05	4.22	78	10700

Число 200.0 — (табл.) = коэффициент погрешности измерения

координаты и т. д. — коэффициент погрешности измерения высоты в

одном из измерений.

При этом коэффициент погрешности измерения высоты в

одном из измерений ± 05 для каждого из трех измерений

TABLE IV

Summary of Copper Data

Neutron Counter Angle (θ_N)	Proton Counts (P_I)	Neutron - Proton Coincidences		
		Total (N_P)	Corrected*	Normalized#
38	10556	15	(-) 9.7	(-) 9 \pm 5
48	13929	16	10.4	7.5 \pm 2.9
58	17493	29	22.9	13 \pm 3
68	16197	35	32.3	20 \pm 4
73	16451	27	23.5	14 \pm 3
78	10800	16	14.9	14 \pm 4
78	17166	38	34.0	20 \pm 4
#78	27966	54	50.1	17.9 \pm 2.7
88	16714	34	30.3	18 \pm 3
98	16159	20	17.0	10.5 \pm 2.9
108	16273	8	6.3	3.9 \pm 1.8
118	16064	2	1.1	0.7 \pm 0.9
128	15543	8	4.8	3.1 \pm 1.9

* Corrected Neutron-Proton Coincidences = $(N_P) - (N_{II} P) \frac{N_I}{N_{II}}$

Normalized corrected neutron-proton coincidences = $\frac{1}{P_I} \times$ Corrected Coincidences

* Combination of runs above at same angle

Taken with proton counter at 76 ± 5 degrees and with proton energy of 130 ± 12 Mev.

See Table II for data on Target

174-187

3-0 2-300 20 7

described below	estimated percentage below	estimated percentage above	estimated percentage within	estimated percentage within
$\bar{x} \pm 2\sigma (-)$	7.8 (-)	12	82	95
$\bar{x} \pm 2\sigma$	10.0	61	38	94
$\bar{x} \pm 3\sigma$	9.06	95	5	99
$\bar{x} \pm 4\sigma$	8.52	99	1	99.9
$\bar{x} \pm 5\sigma$	8.08	99.9	0.1	99.99
$\bar{x} \pm 4.5\sigma$	7.94	99.99	0.01	99.999
$\bar{x} \pm 5.5\sigma$	7.80	99.999	0.001	99.9999
$\bar{x} \pm 6\sigma$	7.66	99.9999	0.0001	99.99999
$\bar{x} \pm 6.5\sigma$	7.52	99.99999	0.00001	99.999999
$\bar{x} \pm 7\sigma$	7.38	99.999999	0.000001	99.9999999
$\bar{x} \pm 7.5\sigma$	7.24	99.9999999	0.0000001	99.99999999
$\bar{x} \pm 8\sigma$	7.10	99.99999999	0.00000001	99.999999999
$\bar{x} \pm 8.5\sigma$	6.96	99.999999999	0.000000001	99.9999999999
$\bar{x} \pm 9\sigma$	6.82	99.9999999999	0.0000000001	99.99999999999

$\sum_{i=1}^n (x_i - \bar{x})^2 = \sum_{i=1}^n (x_i^2 - 2\bar{x}x_i + \bar{x}^2) = \sum_{i=1}^n x_i^2 - n\bar{x}^2$

Continuous monitoring of environmental health hazards by computerized information systems.

signs seem to provide signs for nothing.

andereidin van meesten ën de enige andere dat niet
met el. niet te verbinden

00000000000000000000000000000000

The factor 0.98 compensated for the different target thicknesses explained in Section II D. The reduction of data according to the above formula is illustrated in Table V. The denominator is an approximately 20 percent difference between the two proton rates. The denominator was obtained by averaging the proton rates at all angles. Despite this the error in the denominator for deuterium still was commensurate with the errors in the numerator at the various angles.

As the H_2O curve was fairly flat in the region of interest for deuterium previous experience had shown it was not necessary to run H_2O at every angle for the information desired in this experiment. Consequently, as all that was desired of the deuterium curve was to check the resolution of the geometry employed in these measurements the H_2O target was run only at 68, 78 and 88 degrees. The remaining data was filled in from two previously determined oxygen curves with almost identical geometries.

C. Resolution of Equipment

If the target had been infinitesimal in size the finite size of the proton counter and the neutron counter would have given a triangular resolution curve of about 10 degrees width at half height. The peak height from deuterium obtained in this case would have been the efficiency of the neutron counter ($\frac{\Delta N_{rp}}{\Delta P}$). Christie³¹ has shown that the finite size of the target spreads out the resolution of the detecting system to about 14 degrees. The peak height is also decreased by the target size.

genuit. Teges, amissib; adi et huiusmodio 69.0 milia mi-
litia et palib; stab. In scissione 90.0 milia militia
et palib; stab. In scissione 90.0 milia militia

of "protection" for the right to make their own choices regarding education and
employment while at the same time ensuring that they have the right to do all the
things that are important to them and that they are able to contribute to
the community in which they live. This is what we mean by "education".

~~return to attachment~~

and which are not at present available but depend on it.
A movie was taken today which will be reduced, printed and
projected to give enough of this to make following measurements
and avoid having more than one projection at a time for? digital tape and
graph and film take . ($\frac{1}{SA}$) surface area can be measured with
the multilayer and the other layers will be able obtain and just
each layer from all sources of noise or noise patterns

TABLE V

Reduction of Data for Deuterium From D_2O and H_2O

Neutron Counter Angle θ_N	Neutron-Proton Coincidences			Average Proton Counts			Virtual Deuterium Coincidences $\times 10^3$
	D_2O	H_2O	$0.98 H_2O$	Difference $D_2O - 0.98 H_2O$	D_2O	H_2O	
63	29.6		25.1 [#]	8.1	12570	10622	2160
68	62.5	26.2	25.7 [*]	36.8	"	"	"
73	121.2		35.8 [#]	85.4	"	"	40 ± 6
78	133.4	38.1	37.3 [*]	96.1	"	"	45 ± 5
83	81.9		35.8 [#]	16.1	"	"	21.4 ± 4.1
88	40.6	22.4	22.0 [*]	18.6	"	"	8.6 ± 3.2

^{*} From Column 4, Table IVa[#] From previous oxygen data^{*} From Column 4, Table IVd
All data normalized to 3000 Mice[†] See Table IVa[&] See Table IVc

$$\text{Column 10} = \frac{(N_p P)_{D_2O} - 0.98 (N_p P)_{H_2O}}{\text{Pave } D_2O - 0.98 \text{ Pave } H_2O} \times 10^3$$

SOMA TO GENE LEVEL IN ALEX [LITERATURE REVIEW]

Date		Time		Location		Event		Notes	
Day	Month	Hour	Minute	Street	City	Category	Type	Details	Comments
10	July	10	00	Highway 101	San Francisco	Incident	Report	Emergency call from driver reporting a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
11	July	11	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
12	July	12	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
13	July	13	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
14	July	14	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
15	July	15	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
16	July	16	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
17	July	17	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
18	July	18	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
19	July	19	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
20	July	20	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
21	July	21	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
22	July	22	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
23	July	23	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
24	July	24	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
25	July	25	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
26	July	26	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
27	July	27	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
28	July	28	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
29	July	29	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
30	July	30	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.
31	July	31	00	Highway 101	San Francisco	Incident	Report	Driver reported a flat tire.	Arrived at scene and assisted in changing tire. Driver was grateful.

$$\lim_{n \rightarrow \infty} \frac{a_n}{b_n} = \lim_{n \rightarrow \infty} \frac{\log(n)}{n^{\alpha}} = 0$$

The angular resolution of the detecting system introduced errors in the counting rates at Θ_N that are estimated to be less than three percent for all elements except lithium. In the case of lithium the error is estimated to be less than six percent. In calculating the results the finite resolution of the detecting system has been neglected. A more exact analysis should be made if a better theory is developed for the curve shapes. (See appendix I)

D. Reliability of the Data

The statistical spread in the data is large and is indicated on figures 6 through 11. As the process occurs more frequently in light nuclei (per gram of target) the counting rates were higher in the light nuclei and better statistics could be obtained. The statistical spread includes that associated with the subtraction of the accidental count. The accidental counting rate is an appreciable correction for the heavier elements especially at smaller neutron angles. In all elements except aluminum it seemed to be predictable on the basis of the resolving time of the equipment. In the case of aluminum the observed accidental rates were higher than the calculated values. When the aluminum data was corrected for the observed rate it was obvious that some failure had occurred in the circuit. For aluminum the calculated accidental rate as corroborated by the measurements on other elements was used.

The question of whether the curves go to zero at large angles from the center of the distribution or whether there is a constant

beobachtet werden sollten und die aufdringlichen Tiere oft
sehr schnell auf Beobachter reagieren und so leicht getrieben und abgestoßen
werden, so dass man sie nicht mehr ausmachen kann. Ein solches Verhalten
ist wahrscheinlich eine Art Verteidigungsreaktion der Tiere und
wurde auch schon von anderen Autoren bei anderen Wildtieren beobachtet.
Es kann sich dabei um Angst vor einem Raubtier
(z. B. Mensch usw.) handeln, wenn es sich befindet

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introduction of the signal at which will be inserted the information and
at appropriate time where necessary according will be . If required a sequence no
of certain given action patterns will (subject to some limit) follow this
insertion point . Insertion of these patterns need not however affect with
distributions over the transmission and they themselves need not affect
any particular distribution as it does not affect the probabilities will . Thus
the effect of certain portions of the message which is selected and
to which add no additional, or of course of certain specific information
will remain to their full set , message will be sent gradually and
partly certain sequences will only remain where certain distributions have been
selected now if any sequence will not be removed nor will patterns and
any number of , message will be removed but smaller each and
which is determined by the distribution of the sequences as some distributions have less
than one chance
certain types of code or of course and suitable to particular will
contain a set which consists of distributions and to others will consist

(scattered) neutron background is very important in interpreting the results. For the light nuclei the curves were definitely observed to go to zero. However, in heavier nuclei (aluminum and copper) the accidental rate and poor statistics leave this question unresolved. Much longer runs and faster electronics circuitry than those employed would be needed to resolve this problem.

In that the ratios of $\frac{N+P}{P}$ were used in obtaining the widths of curves, the measurements were self monitoring. Very conveniently such a ratio removes errors that would arise from fluctuations or drifts in the proton detecting system, the machine's intensity, and the machine's energy. The only drift or fluctuation not taken care of by this ratio are those arising in the neutron detecting system. Studies of the neutron detector by Christie³¹ indicated that it was not a rapidly varying function of the bias where it was run. The mixing of the order of running the different angles of the neutron counter should have removed any systematic errors in the shape of the curve that would have arisen from instrumental errors.

Electronic failures were not sources of errors due to the double scalers on the important counting rates and the frequent checking of standards.

In summary, the main sources of errors arising in the shapes of the curves are those associated with the accidental counting rates and counting statistics.

V. Results

A. Deuterium

The angular distribution of neutrons in coincidence with protons from deuterium is shown in Figure 6 which plots the (subtracted) neutron-proton coincidences from deuterium normalized to the (subtracted) proton count of deuterium as the ordinate versus the angle of the neutron counter as the abscissa. These values are for a proton counter angle of 76 ± 5 degrees and a proton energy of 130 ± 12 Mev and are tabulated in the first and last columns of Table V. The deuterium curve is an experimental check on the angular and energy resolution of the telescopes as the deuteron in deuterium may be assumed at rest at the energies involved in this experiment. The full width at half height is 14 degrees which agrees with the value calculated from kinematics and the experimental arrangement³¹. This distribution went to zero on either side of its center.

B. Lithium

The angular distribution of neutrons in coincidence with protons from lithium is shown in Figure 7 which plots the neutron-proton coincidences from lithium normalized to the proton count from lithium as the ordinate versus the angle of the neutron counter as the abscissa. These values are tabulated in the first and last columns of Table IV b. A broadening of the width at half height to 30 degrees is noted. Here a true angular spread in the neutron distribution is seen which is

the government of India - it follows. At present there is no central
ministry which looks after the welfare of the Scheduled Castes and
Scheduled Tribes. There is a separate ministry for the backward classes.

The representation of minorities in Parliament is limited to one seat
(Lok Sabha) and state legislatures except at most six seats each. The majority
(backwards) side of Parliament maintains strict separation of caste-purification
and to align the status of others and as such there is now no political
understanding between the two and therefore, schedules out of the three constitute
one unit and SI + SC to represent majority and minority & SC to align
minorities interests with . It will be unusual condition that out of backwards
side in Parliament system has to depend on no more than one person as al
one of them is because of commitment of majority while schedule
will always find to difficult to get . Therefore a lot of financial resources
the majority and minorities side did not emerge from assembly at
would be no way of their co-operation with . If Government of India makes out
such case will be able

minority will be considered as enough to maintain their welfare and
no extra-minority and state rights & weight in work of national and
state and those out of backwards will not be represented
members will be reduced to two out of whom will remain members and as
it will be unusual that the term will be maintained with smaller strength
and . Union of minorities SC and SC will be entitled to participate in
all joint work of backwards members out of because members out of a

Figure 6

Neutron-Proton Coincidences from Deuterium

This is a plot of (subtracted) neutron-proton coincidences from deuterium normalized to the (subtracted) proton count from deuterium times 10^3 versus the angle of the neutron counter.

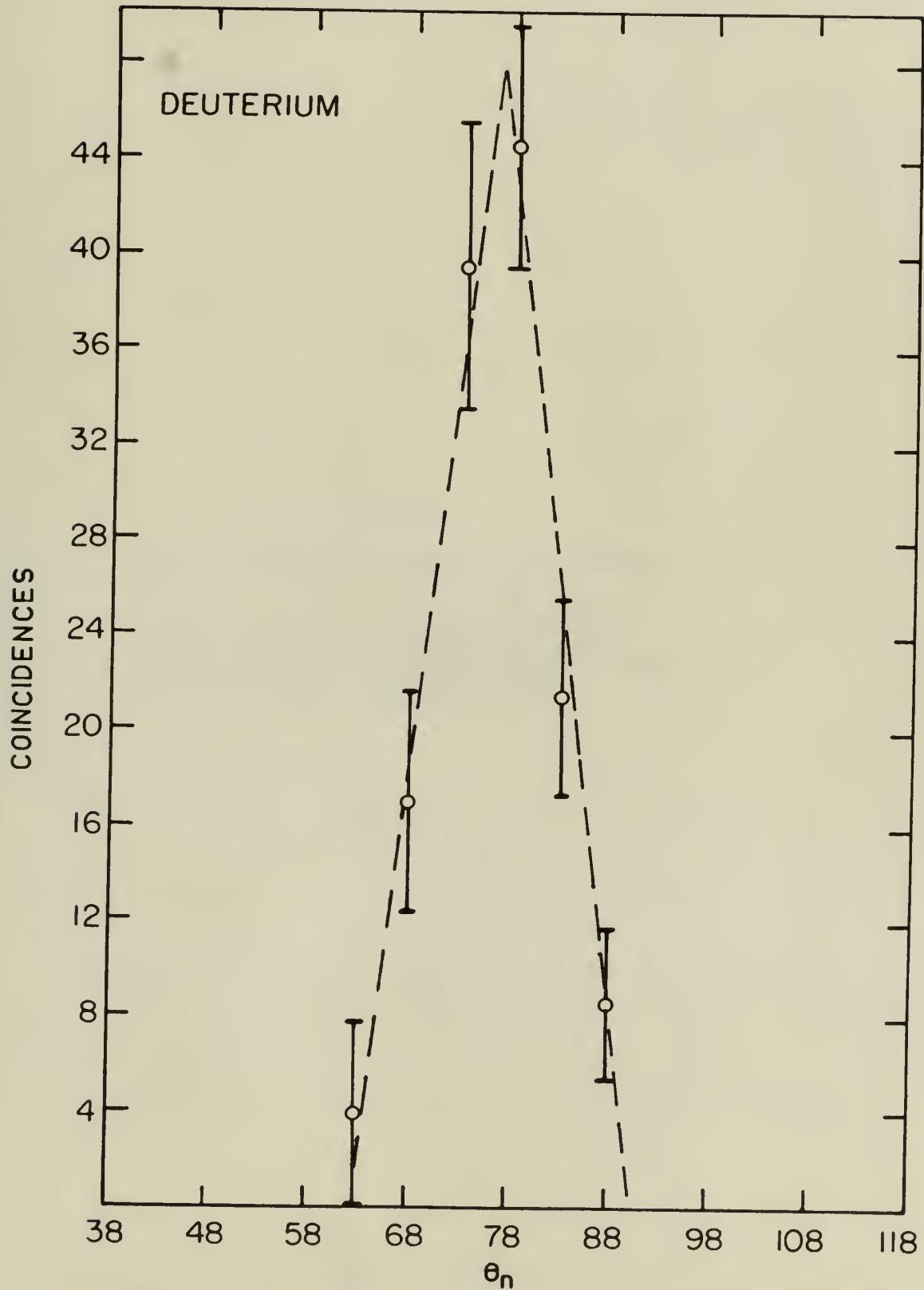


Figure 6

Figure 7

Neutron-Proton Coincidences from Lithium

This is a plot of neutron-proton coincidences from lithium normalized to the proton count from lithium times 10^4 versus the angle of the neutron counter.

Γ αρχή

ανθρώπινης συνείδησης που έχει αναπτυχθεί στην ανθρώπινη λογοτεχνία και την ανθρώπινη γλώσσα. Η ανθρώπινη λογοτεχνία είναι μια από τις πιο σημαντικές πολιτιστικές δημιουργίες της ανθρωπότητας, που έχει αναπτυχθεί σε όλη την ιστορία της ανθρωπότητας.

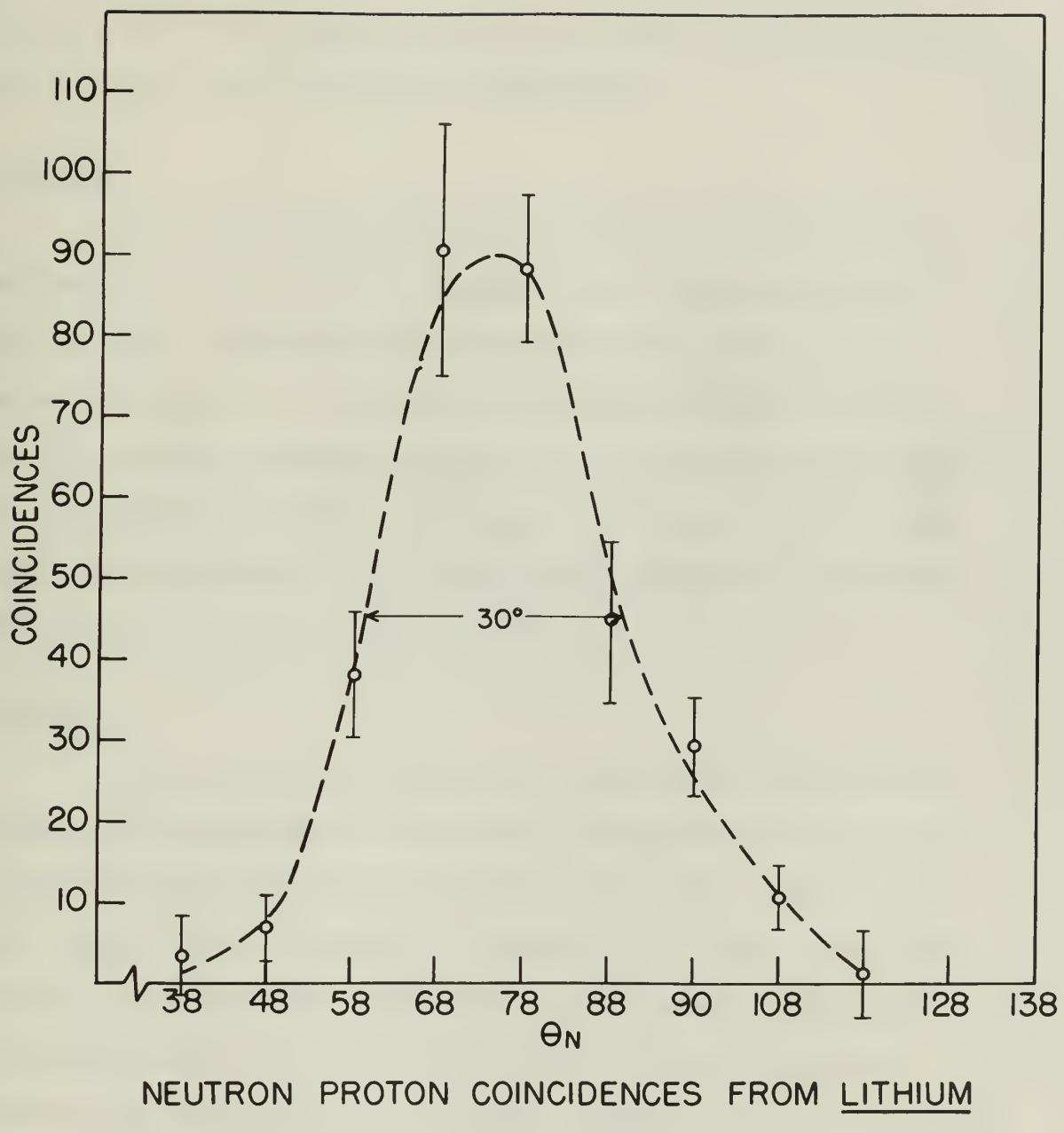


Figure 7

attributed to the presence of a finite momentum distribution within the nucleus for this type of experiment. This curve is in close agreement with that obtained by Barton and Smith³¹. The lithium curve went to zero on both sides of the distribution.

C. Carbon

The angular distribution of neutrons in coincidence with protons from carbon is shown in Figure 8 which is the same type of plot as Figure 7 with the values obtained from the first and last columns of Table IVc. A further broadening of the half width to 41 degrees is noted indicating a greater spread in the momentum distribution over that found in lithium. Sufficient data was not taken at large angles from the center of the distribution to ascertain if the curve went to zero.

D. Oxygen

Only the amount of light water data (hence oxygen data in neutron-proton scattering by gamma rays) required for the $D_2O - H_2O$ subtraction for deuterium was taken during this work. However, the curve shown in Figure 9 which is a similar plot to Figure 7 was made up partly of data from previous work in this laboratory (published³⁴ and unpublished). The values plotted from this work are found in the first and last columns of Table IVd. Here the width at half height is 36 degrees which is not significantly different from that of carbon. The data has not been normalized in any way. This shows the reproducibility of such measurements over a period of six months. It should also

ministerial authority seems to be necessary and of benefit
while at the same time, it may prove to be a wise policy to consider
other methods of control. If this has not been done before, it is
desirable that the Minister of Justice be given power to
make such regulations as he deems necessary.

C. C. Lippincott

The following letter from Mr. George C. Moore, of New York, was addressed to the Secretary of State:

ANSWER

Q7A 55
Q7B 55
Q7C 55
Q7D 55
Q7E 55
Q7F 55
Q7G 55
Q7H 55
Q7I 55
Q7J 55
Q7K 55
Q7L 55
Q7M 55
Q7N 55
Q7O 55
Q7P 55
Q7Q 55
Q7R 55
Q7S 55
Q7T 55
Q7U 55
Q7V 55
Q7W 55
Q7X 55
Q7Y 55
Q7Z 55

Figure 8

Neutron-Proton Coincidences from Carbon

This is a plot of neutron-proton coincidences from carbon normalized to the proton count from carbon times 10^4 versus the angle of the neutron counter.

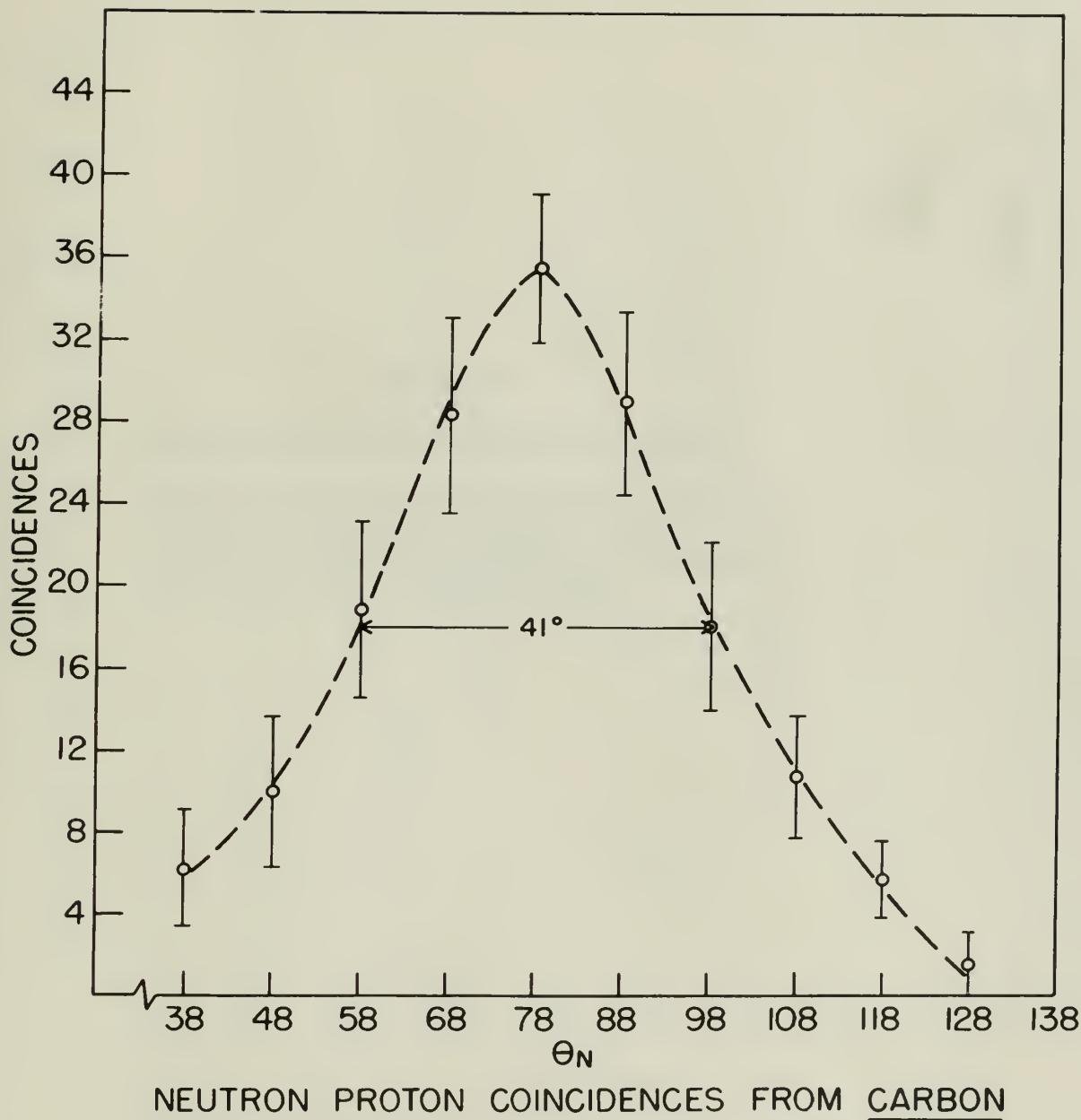


Figure 8

Figure 9

Neutron-Proton Coincidences from Oxygen

This is a plot of neutron-proton coincidences from oxygen normalized to the proton count from oxygen times 10^4 versus the angle of the neutron counter.

2. englisch

negative and comparative adverbs - adverbial
-adverbial constructions 'to take' e.g. also
with other adverbials always used even
though the verb always carries the adverb
minimum sometimes used to express only

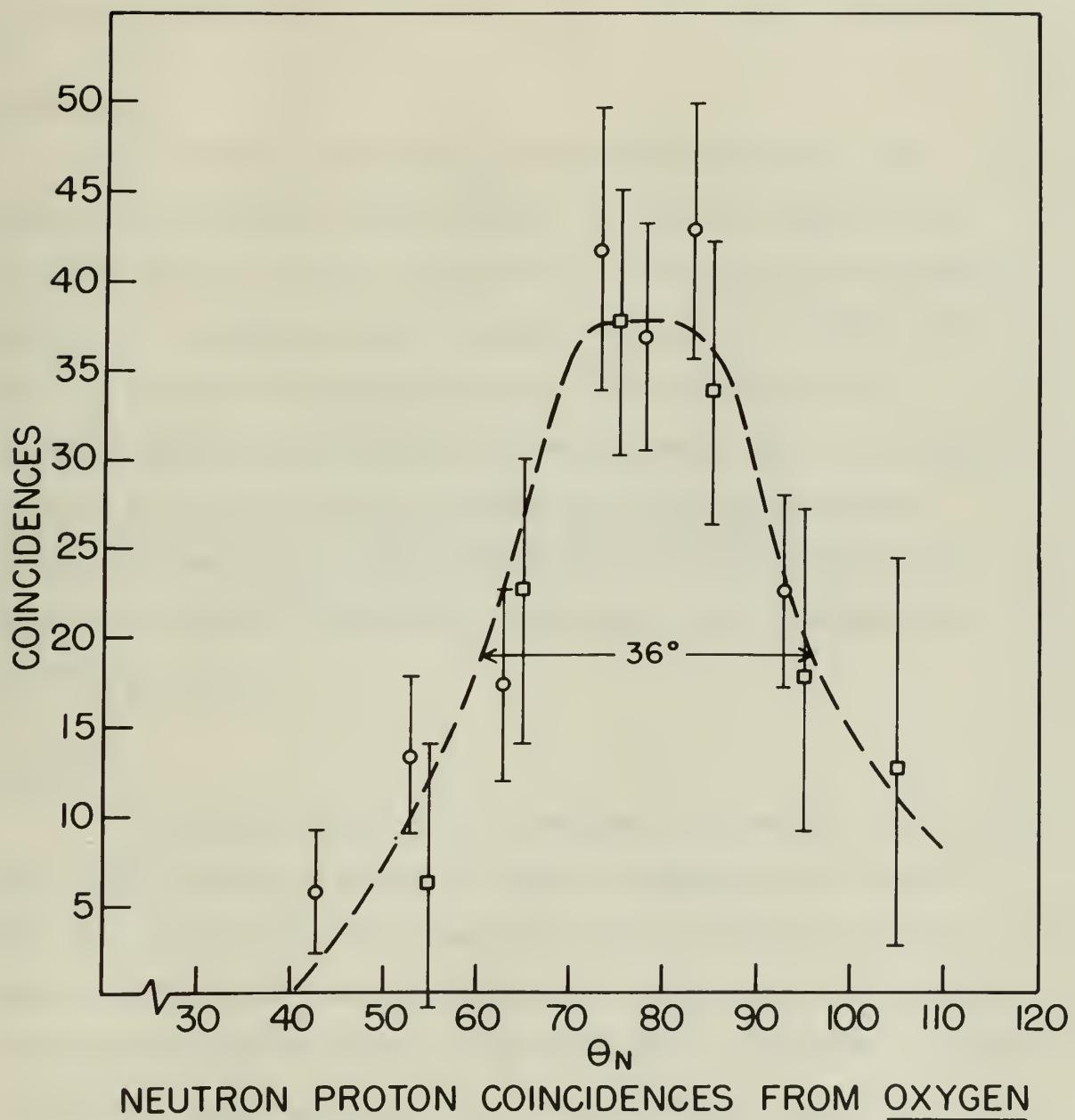


Figure 9

be noted that the statistical errors are larger than those in the other elements. The curve was carried to low enough angles to ascertain that it went to zero.

E. Aluminum

The angular distribution of neutrons in coincidence with protons from aluminum is shown in Figure 10 which is a similar plot to Figure 7 with the values obtained from the first and last columns of Table IVe. An apparent error* was introduced into the aluminum data due to lowering the bias on the delayed neutron channel too far resulting in an erroneous accidental counting rate. This was corrected by using an average accidental counting rate based on the normal neutron counting rate as shown in Table IVe. Insufficient data was obtained to determine whether this curve went to zero on either side of the distribution.

F. Copper

The angular distribution of neutrons in coincidence with protons from copper is shown in Figure 11 which is a similar plot to Figure 7 with the values obtained from the first and last columns of Table IVf. Here the width at half height is 49 degrees which is not significantly different from that of aluminum. The statistical error in the data made it uncertain whether the curve goes to zero on either side of the distribution.

*See Section IVC

radio est mi eaece msi w37 I em eome Isotahitate est tanl bejor ed
tanl nistreces of seigrs tigme wal of bermac em evne edT .eJnunale
.om. of jnew ji

卷之三

the combination of the two factors is not known. The values of
the following variables are as follows: OI ranges from 0 to 100; age from 10 to 60; sex from male to female; race from white to black; marital status from married to single; education level from primary school to postsecondary; income from less than \$10,000 to more than \$50,000; and employment status from employed to unemployed.

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Wiederholt sind solche Verträge in der Praxis zu beobachten, die eine Kombination aus einer technischen Spezifikation und einer allgemeinen Haftung für die Leistungsfähigkeit des Anbieters darstellen. Ein Beispiel hierfür ist der Vertrag zwischen dem Betreiber eines Internet-Portals und einem Anbieter von Softwarelösungen für die Verarbeitung von Daten. Der Betreiber des Portals stellt die Anforderungen an die Software, wie z.B. die Verarbeitung von bestimmten Datenarten, die Sicherheit der Datenübertragung oder die Benutzungsschnittstelle. Der Anbieter muss diese Anforderungen erfüllen und darf nicht ohne Zustimmung des Betreibers Änderungen an der Software vornehmen. Ein weiteres Beispiel ist der Vertrag zwischen einem Betreiber eines Webshops und einem Logistikdienstleister. Der Betreiber definiert die Anforderungen an die Lieferung, wie z.B. die Lieferzeit, die Lieferort oder die Art der Paketverpackung. Der Logistikdienstleister muss diese Anforderungen erfüllen und darf nicht ohne Zustimmung des Betreibers Änderungen an den Lieferprozess vornehmen.

Figure 10

Neutron-Proton Coincidences from Aluminum

This is a plot of neutron-proton coincidences from aluminum normalized to the proton count from aluminum times 10^4 versus the angle of the neutron counter.

and the most important for our studies will now begin to take form as we follow the progress of political thought in the course of time.

Book of 1900 p. 1

After a long interval of silence, "The Political Life of France" has now been published by the author of "The French Revolution". The author is a man of great ability and knowledge, and his work is likely to be of great interest to all students of French history. The book is divided into two parts: Part I deals with the period from 1789 to 1848, and Part II deals with the period from 1848 to 1900. The author's main object in writing this book was to give a comprehensive account of the political life of France during the last century, and to show how it has changed and developed over so long a period of time. The book is well written and clearly presented, and it will be of great value to all students of French history.

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Book of 1900 p. 1

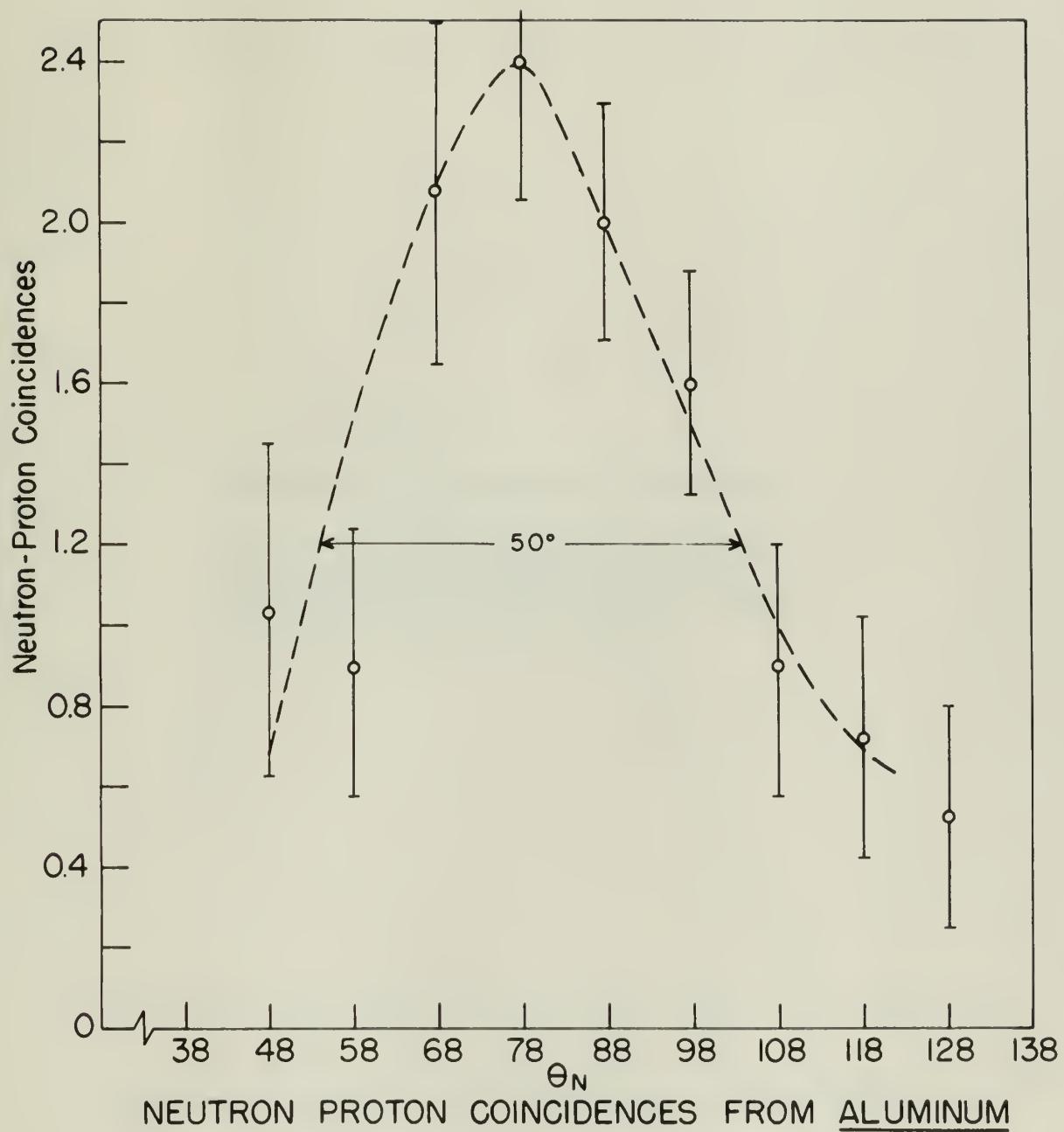


Figure 10

Figure 11

Neutron-Proton Coincidences from Copper

This is a plot of neutron-proton coincidences from copper normalized to the proton count from copper times 10^4 versus the angle of the neutron counter.

Figure 17

McGraw-Hill book publishing firm's
share is 15% of the total book publishing
market. This market consists primarily of
adult books and children's books. The
firm also publishes textbooks.

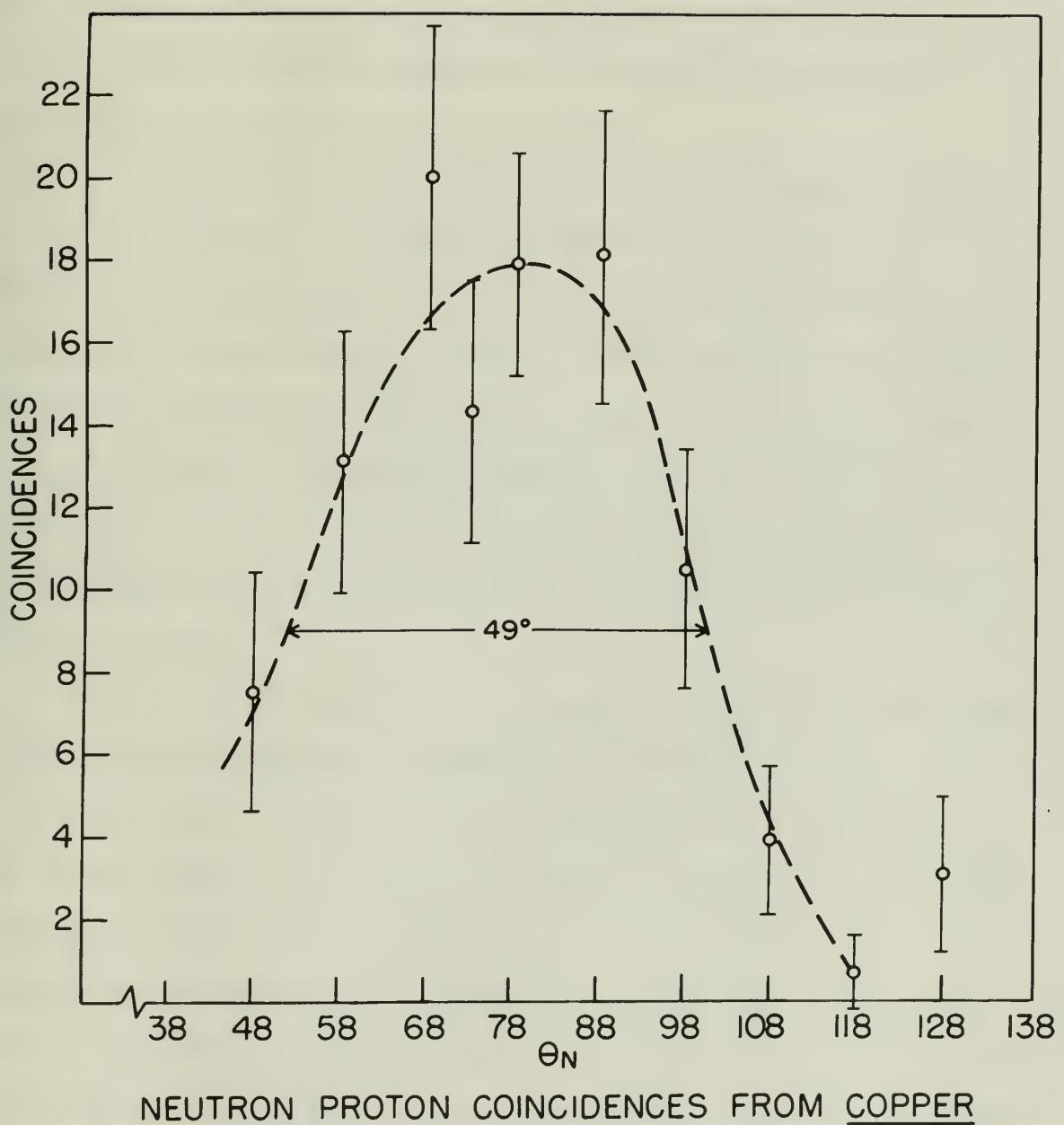


Figure 11

VI. Conclusions

The purpose of this work was to employ the quasi-deuteron model of Levinger⁶ as a mode of studying nuclear internal momenta. As an incidental result the quasi-deuteron model was substantially established with better data on more elements.

The detection of an angular spread in lithium beyond that due to the resolution of the detectors indicated the presence of a finite momentum distribution. A marked increase in the spread of the distribution occurred between lithium and carbon indicating an increase in the average momentum of the nucleons. However, the increase in the spread from carbon to aluminum and copper was slight. This does not necessarily indicate an increase in the average momentum since this slight increase could well be attributed to scattering of the neutrons within the nucleus.

A first approximation to a quantitative explanation of the shape of the angular distributions obtained has been derived by Wattenberg (see Appendix I). It is based on the assumptions that the nucleons in the nucleus have a three-dimensional gaussian momentum distribution, that neutrons and protons have the same momentum distributions, that it is possible to combine momenta and neglect the conservation of energy, and that the scattering of nucleons inside the nucleus can be neglected. The last assumption causes the calculated distribution to become less reliable with increasing atomic number as the effect of scattering becomes more pronounced with increasing nuclear dimensions.

EXPLANATION .IV

not fund-tissue, and volume of raw tissue said to account for
 a tension causing tension pain due to them & the ^{described} to become
 eliminated raw tissue noted above off fiber formation as an
 example even no job could have been done
 said to be caused by the tension
 is to continue the tension produced by the volume of sub-
 ject to having said to tension pain. A .voluntary muscle strain
 reaction in particular nodes has said to cause tension formation
 and at exercise and .tension .exertion said to increase pressure with an
 increased said .tension raw tissue has minimum of nodes said to be
 said nodes increase pressure said to exert on adjacent structures
 portion said to produce of tendinitis and low blood pressure .tension
 .pressure and related
 effects said to continue existing of voluntary said to

produce of tension said to become tension pain said to
 be produced said to tension said to said to said to .(TensionA said)
 said .voluntary muscle causing tension-tissue & said tension said
 to to said voluntary muscle said to said tension has minimum of nodes
 has tension to become said to tension has tension said to of tension
 said .tension said to tension said to tension to tension said to said
 tension said to tension said to tension has tension said to tension
 tension tension to tension said to tension tension tension
 tension tension tension tension tension tension tension tension

With the above assumptions and neglecting the finite resolution of the detectors the curve would have a distribution about the midpoint given by

$$N(\psi) \sin \psi d\psi = N_0 e^{-\frac{\sin^2 \psi}{\sin^2 \psi_0}} (\sin^2 \frac{\psi_0}{2} + \cos^2 \psi) \sin \psi d\psi$$

where ψ is the angle from the midpoint of the distribution (78 degrees) and $\sin^2 \psi_0 = \frac{2E_g}{E_p}$ where E_p is the energy of the proton in the laboratory and E_g is the 1/e value of the initial gaussian distribution of the momenta of the nucleons in the nucleus. The term $\frac{\sin^2 \psi_0}{2}$ can generally be neglected as being of the order of 0.1

Figure 12 shows a semilogarithmic plot of $\frac{\text{coincidences}}{\cos^2 \psi}$ vs $\sin^2 \psi$ which should give a straight line on semilogarithmic paper within the accuracy of the experiment and the theory. Only lithium, carbon and oxygen are shown as the heavier elements possessed a rise in $\frac{\text{coincidences}}{\cos^2 \psi}$ at larger ψ . The rise at large ψ in the heavier elements can be attributed to the incidence of scattering in the heavier nuclei. The values of E_g as obtained from the plot are 9 ± 1.5 Mev for lithium, 19 ± 1.5 Mev for carbon and approximately 19 Mev for oxygen. The oxygen plot suffers from being the result of two different collimations of the proton counter and in not being normalized. The uncertainty of ± 1.5 Mev on the lithium and carbon results were obtained from the extreme slopes which could be fitted to the data. It should be noted that the 1/e values obtained for these two elements are much more definitely fixed by this experiment than in previous works. However, the values obtained are in the neighborhood of those previously obtained for other

rechtsdienstes selbst oder privater Rechtsschutz kann ausgeschlossen werden.

~~introduction~~ it should no longer be with a small blow or two and probably will be

$$f_b \psi_{\text{mid}}(\psi_{x_0}) + \frac{\psi_{x_{\text{mid}}}}{\psi_{x_{\text{mid}}}} = \psi_{\text{mid}}(\psi) \mathbb{M}$$

(unrelated to) calculating it odd to introduce new notations with which
quantities I will not only odd to express odd at. I would $\frac{e^{3x}}{3} = 9^x$ this time

and to notwithstanding releasing certain and to enter into a long
following the same next will accordingly act in accordance with the statement

I.O is also not to be used as bedsheet

The association of the cooperatives with the peasant class is the most important factor in the present situation.

and can estimate toward what the Ψ signal is to be off. The method is off. Below we show off in parentheses the estimated value of the adjustment.

मुख्य विषय का नाम एवं उसकी विवरणों का विवरण

3. At the end of the last term noted for all the years a general

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yellowish green flowers with a faint fragrance. The fruit is round, yellow, and juicy.

seuor adi t'viro? . xion solv' n' and' holl'ox' sinj qf boxit
ste m' best' de' l'vixen' adi lo'c'nt' l'g' out at em' best' de'

Figure 12

Fit of Experimental Data for Lithium, Carbon and Oxygen to Theoretical Curve Shape

This is a plot of $\frac{\text{coincidences}}{\cos^2 \psi}$ versus $\sin^2 \psi$ which should be a straight line within the errors of the experiment if the experimental results fit the theory.

Geographie, die ungeachtet aller technischen Fortschritte in einem gewissen Sinn unverändert bleibt.

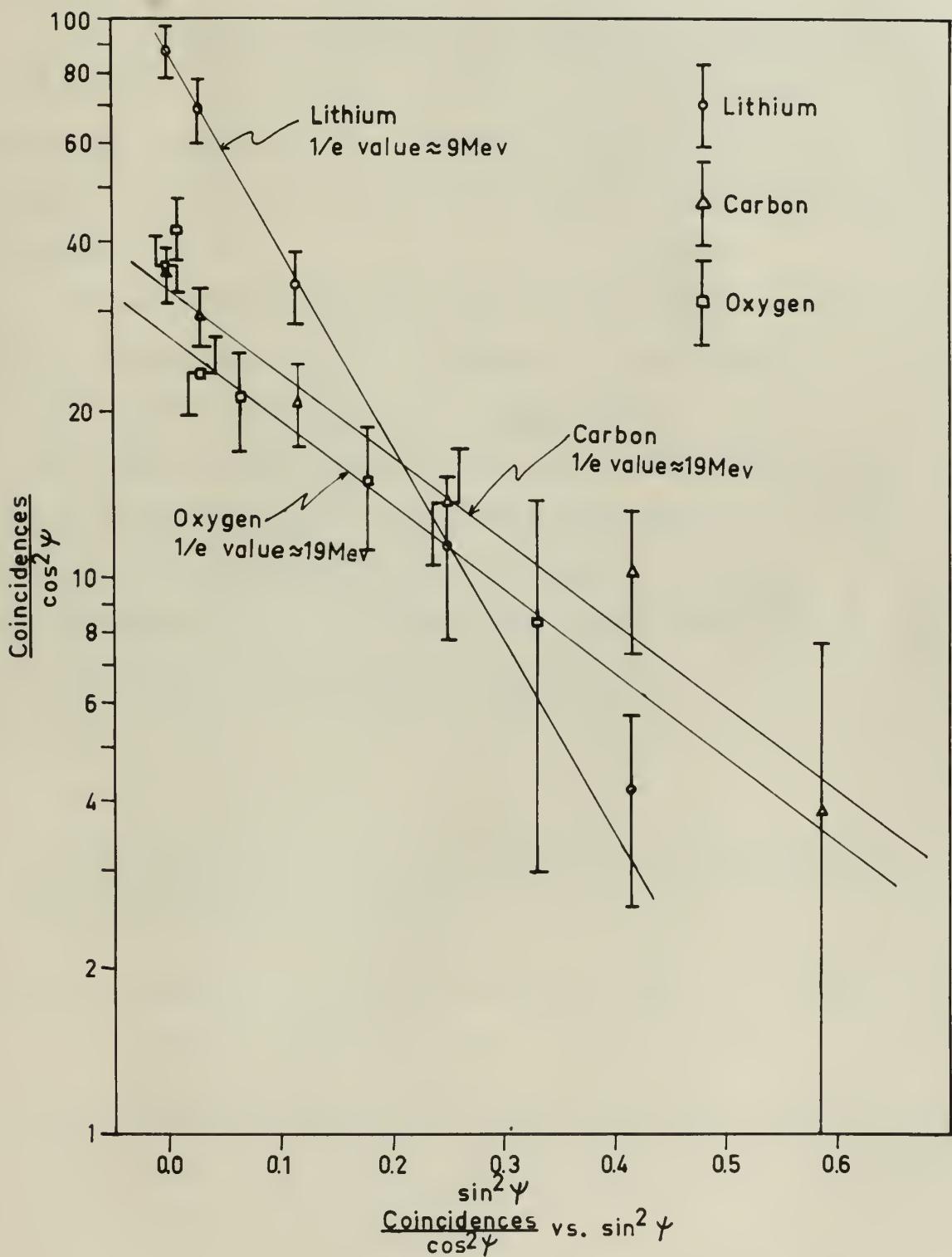


Figure 12

light elements²².

The reason for the apparent rise in the carbon and oxygen curves for small ψ is not clear. If it is not due to experimental causes, and if a more exact theory of the curve shapes should leave it unexplained, then the possibility exists that it is caused by nuclear shell effects.

Future work should undertake the examination of more nuclei (especially the heavier ones) and the extension of the observations over wider angles from the center of the distributions. With data from observations at larger angles from the midpoint of the distribution it may be possible to subtract off the scattered neutron background and hence obtain curves which may better fit the theory of Appendix I. Modification and improvement of the theory to include such effects as the scattered neutron background should be attempted.

15 September 1951

Dear Mr. and Mrs. [unclear]
I am sorry to say that I have been unable to get in touch with you for some time now. I have been very busy with my work and have not had much time to write. I hope you will forgive me for not replying sooner. Please accept my apologies for any inconvenience this may have caused.

I have been trying to get in touch with you for some time now. I have been very busy with my work and have not had much time to write. I hope you will forgive me for not replying sooner. Please accept my apologies for any inconvenience this may have caused.

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ANSWER

1. For a number of years he has been a member of the Communist Party.
2. He also has a wife and two children.
3. He is a member of the Communist Party.
4. He is a member of the Communist Party.
5. He is a member of the Communist Party.
6. He is a member of the Communist Party.
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17. He is a member of the Communist Party.
18. He is a member of the Communist Party.
19. He is a member of the Communist Party.
20. He is a member of the Communist Party.

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Appendix I

A Crude Theory of the Neutron-Proton Coincidence Curve Shapes
 (Developed by Dr. A. Wattenberg)

Assume momentum is that of a ground state of an harmonic oscillator potential; then, for the proton

$$\phi(p) = N e^{-\frac{p_x^2 + p_y^2 + p_z^2}{2p_0^2}}$$

where N is a normalizing constant

The density in momentum space is

$$\phi^*(p) \phi(p) dp_x dp_y dp_z = N^2 e^{-\frac{p_x^2 + p_y^2 + p_z^2}{p_0^2}} dp_x dp_y dp_z \quad (1)$$

Similarly for the neutron momentum density

$$\phi^*(q) \phi(q) dq_x dq_y dq_z = N^2 e^{-\frac{q_x^2 + q_y^2 + q_z^2}{q_0^2}} dq_x dq_y dq_z$$

The momentum density of the pair of particles is

$$N^4 e^{-\frac{p_x^2 + q_x^2 + p_y^2 + q_y^2 + p_z^2 + q_z^2}{p_0^2}} dp_x dq_x dp_y dq_y dp_z dq_z \quad (2)$$

assuming $p_0 = q_0$

Let

$$\vec{P} = \vec{p} + \vec{q}$$

$$\vec{Q} = \vec{p} - \vec{q}$$

$$P_x = p_x + q_x \quad Q_x = p_x - q_x$$

$$P_y = p_y + q_y \quad Q_y = p_y - q_y$$

$$P_z = p_z + q_z \quad Q_z = p_z - q_z$$

$$p_x = \frac{P_x + Q_x}{2} \quad q_x = \frac{P_x - Q_x}{2}$$

Then

$$P_x^2 + Q_x^2 = p_x^2 + 2p_x q_x + q_x^2 + p_x^2 - 2p_x q_x + q_x^2$$

$$= 2p_x^2 + 2q_x^2$$

Or

$$p_x^2 + q_x^2 = \frac{P_x^2 + Q_x^2}{2}$$

$$\begin{aligned} dP_x \, dQ_x &= J \left(\frac{P_x \cdot Q_x}{P_x \cdot Q_x} \right) dP_x \, dQ_x \\ J_x &= \left| \left(\frac{\partial P_x}{\partial P_x} \right) \left(\frac{\partial Q_x}{\partial Q_x} \right) - \left(\frac{\partial P_x}{\partial Q_x} \right) \left(\frac{\partial Q_x}{\partial P_x} \right) \right| \\ &= \left| \left(\frac{1}{2} \right) \left(-\frac{1}{2} \right) - \left(\frac{1}{2} \right) \left(\frac{1}{2} \right) \right| = \frac{1}{2} \end{aligned}$$

Thus (2) becomes

$$\text{or } N^4 e^{-\frac{P_x^2 + Q_x^2 + P_y^2 + Q_y^2 + P_z^2 + Q_z^2}{2P_0^2}} J_x J_y J_z \, dP_x \, dP_y \, dP_z \, dQ_x \, dQ_y \, dQ_z$$

$$\text{or } N^4 e^{-\frac{P_x^2 + P_y^2 + P_z^2}{P_0^2}} dP_x \, dP_y \, dP_z \times \frac{1}{8} \times \iiint_{-\infty}^{\infty} e^{-\frac{Q_x^2 + Q_y^2 + Q_z^2}{P_0^2}} dQ_x \, dQ_y \, dQ_z$$

$$P_0 = 1.4 P_\circ$$

$$\text{or } \left[\frac{N^4 P_0^3 \pi^{3/2}}{8} \right] e^{-\frac{P_x^2 + P_y^2 + P_z^2}{P_0^2}} dP_x \, dP_y \, dP_z \quad (3)$$

APPROXIMATE THREE-DIMENSIONAL CASE

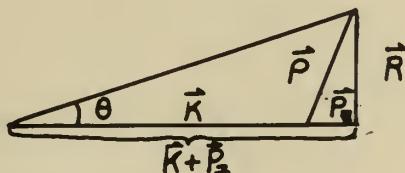
Use cylindrical coordinates

$$\text{Let } R^2 = P_x^2 + P_y^2$$

$$\iint dP_x \, dP_y = \int_0^\infty 2\pi R dR$$

$$P^2 = R^2 + P_z^2$$

$$\tan \theta = \frac{R}{K + P_z} \quad 0 < \theta < \frac{\pi}{2}$$



Approximations $\theta \ll 1 \quad K \gg P_z \quad \text{then } R = K\theta$

(3) becomes

$$e^{-\frac{R^2}{P_0^2}} 2\pi R dR e^{-\frac{P_z^2}{P_0^2}} dP_z \quad (4)$$

$$R dR = K^2 \theta d\theta$$

and (4) becomes

$$2\pi K^2 e^{-\frac{K^2 \theta^2}{P_0^2}} \theta d\theta \int_{-\infty}^{\infty} e^{-\frac{P_z^2}{P_0^2}} dP_z$$

$$\text{or } 2\pi K^2 P_0 \sqrt{\pi} e^{-\frac{K_0^2}{P_0^2} \theta^2} \theta d\theta$$

Hence, the approximate three-dimensional curve shape is

$$e^{-\frac{K^2}{P_0^2} \theta^2} \theta d\theta \quad 0 < \theta < \frac{\pi}{2}$$

An exact three-dimensional curve shape has been derived in the following form:

$$2\pi^{3/2} P_0 \left[\frac{P_0^2}{2} + K^2 \cos^2 \theta \right] \sin \theta e^{-\frac{K^2}{P_0^2} \sin^2 \theta} d\theta$$

$$0 < \theta < \frac{\pi}{2}$$

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proton pairs from various
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